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THE MEDICAL CHRONICLE.

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THE VARIETIES OF PERICOLIC INFLAMMATION.*

By W. H. Newton, M.B., B.C.,

Late House Surgeon and House Physician, St. George's Hospital, London.

Pericolitis, though its occurrence is by no means uncommon, has hardly met with the attention it deserves. The literature on the subject is scanty, and in many text-books the condition is not mentioned. This, perhaps, is in some way accounted for by the lack of post-mortem data, on which to form a true picture of the disease; and also because it is but rarely that a chance of examining the condition on the operating table presents itself.

History. It was in 1890 that Windscheid[13] first described a disease, characteroised by an acute swelling on the right side of the abdomen, fever and pain, which he considered to be a circumscribed peritonitic exudation around the ascending colon. To this condition he gave the name of pericolitis. Since then a similar condition has been frequently described under different names, and with different interpretations. In 1897, Pal[10] recorded eight similar cases under the title of 'Primary submucous circumscribed Colitis'; in most of these there was fever, and in all there was a circumscribed, painful, inflammatory swelling in the region of either the ascending or descending colon, or of one of the flexures of the colon. Though these cases were apparently of the same nature as those described by Windscheid, they were regarded by Pal as a submucous infiltration due to the invasion of micro-organisms; not as a pericolitis comparable to perityphilitis. Cases have also been described by Bittorf[2] as

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acute circumscribed sigmoiditis. As neither before nor after death was there any examination of the pathological condition present we cannot be sure that the lesion was confined to the sigmoid; a more suitable title would be that of sigmoiditis and pericolitis, as used by Hemmeter,[5] or pericolitis sinistra, under which title Rolleston[13] has described cases. Further contributions to the literature on the subject have been made at various times by Rixford[12] in America, and by Bland-Sutton,[3] Cuff,[4] and D'Arcy Power[11] in this country.

Site. All these cases, though differing in name, are essentially of the same nature, and may all be grouped together under the title of pericolitis. From a study of them it appears that pericolitis is not limited to any one region of the colon, but that it may occur anywhere along the course of the large intestine; for the purposes of this paper, therefore, the following definition has been adopted, namely, that pericolitis is an inflammation of the peritoneum in immediate relation with the colon either ascending (exclusive of cases of appendicitis) transverse, or descending. The reservation of appendicitis puts out of count 99 per cent. of the cases of circumscribed inflammation in connection with the ascending colon; but that inflammation in connection with the ascending colon does occur, independently of the appendix, is definitely proved by two cases recorded by D'Arcy Power.

In connexion with the transverse colon I have been unable to find a record of any case of primary pericolitis, though the flexures, both hepatic and splenic, are occasionally the site of pericolic inflammation. This restriction is, apparently, because at the flexures the greatest resistance is offered to the passage onwards of the contents of the large intestine; and especially is this the case at the hepatic flexure for, as Lichtenstein[8] suggests, because of the assumption of the upright position, the fæces have to be propelled along the ascending colon against the force of gravity, and naturally meet with most resistance at the narrowest parts, which are the hepatic and splenic flexures.

By far the commonest site, however, for these inflammations is in connection with the descending colon, and especially low down near the commencement of the sigmoid flexure. It is this class of cases, described by Rolleston under the title of Pericolitis

Sinistra, which gives rise to symptoms of an appendicitis occurring on the left side of the abdomen instead of the right.

It might be added that F. S. Kidd [6] has recorded three cases of hyperplastic tuberculous pericolitis of the sigmoid flexure, which is really hyperplastic tuberculous inflammation of the intestine concentrated on the subserous tissues instead of on the submucous coat as is usually the case in hyperplastic tuberculous disease of the alimentary canal.

The *pathology* of pericolitis has been much debated and many hypotheses have been advanced to explain the causation of the disease. All, however, are agreed that, in the majority of cases, constipation plays a very important part in this condition, though there are instances in which there was no previous history of this trouble. One of the chief obstacles to an exact appreciation of the pathological phenomena is the lack of post-mortem data; and until a sufficient number of cases have been examined during the acute stage of the disease, we can only conjecture the condition which is present. Rolleston suggests that fæcal accumulation gives rise to inflammation of the mucous membrane and other coats of the colon, and so by extension to local peritonitis. There is one objection to this hypothesis, however, namely, that it would be reasonable to suppose that an inflammatory condition of the mucous membrane of the large intestine could set up diarrhœa. In pericolitis, however, this is not the case, but rather the opposite condition obtains, patients suffering from pericolitis being in the great majority of cases victims of constipation. Another possibility, which escapes the objection raised to the previous hypothesis is, that the hard fæcal masses in the colon injure the mucous membrane, causing small tears or abrasions, and thus allowing of the passage of micro-organisms into the submucous tissues, from whence they are carried by the lymph channels into the connective tissues surrounding the colon, and there set up inflammation. This would be comparable to the spread of inflammation from the uterus in cases of peri- and para-metritis, or to the occurrence of pleurisy in cases of confluent broncho-pneumonia. Is inflammation or some abrasion of the mucous membrane necessary before pericolitis can occur? For in some cases of undoubted pericolitis, as shown by examination after

death, it has been impossible to demonstrate the existence of any injury or inflammatory condition. The answer, I think, must be in the affirmative. For the weight of evidence goes to show that in health the intestinal mucous membrane will not allow of the passage into the submucous membrane of micro-organisms, normally contained in its lumen, unless its vitality has been depressed by inflammation or by some breach of its surface; and in those cases in which no post-mortem evidence of any such lesion has been found, is must be supposed that the inflammation was so transitory or the abrasion so small, that at the time of examination all trace of its existence had disappeared.

There is, however, another and a weightier objection to both of these suppositions. Constipation is exceedingly common, and slight attacks of inflammation and small abrasions of the mucous membrane caused by scybalous masses, must be of fairly common occurrence, yet the number of patients, who suffer from pericolitis is comparatively small.

This brings us to another hypothesis, which obviates the objections raised to the two preceding ones, and which is supported by such post-mortem data as are available.

A certain proportion of the subjects of chronic constipation are found after death to have sacculation of the colon. These sacculi, or acquired diverticula, vary in size from a millet seed to an apple; and though they may occur in all parts of the intestine, they are far more frequently found in the large intestine, where small hernial protrusions of the mucous membrane between the tenia are normally found. And it has been suggested that, in chronic constipation the action of the accumulated fæcal material on these small protrusions of mucous membrane, between the tenia, causes them to enlarge and become definite sacculi. Thus a condition arises comparable to a small appendix, which may occur in any part of the large intestine, and which is subject to many of the pathological changes found in the appendix vermiformis. In these sacculi hard fæces accumulate and by their irritation set up an inflammation of the mucous membrane. The bacteria, which normally inhabit the large intestine, and of which the most important is the *Bacillus coli communis*, multiply and take on pathogenic properties, and the inflammation thus set up

in the mucous membrane of a sacculus, owing to the extreme tenuity of its walls, spreads easily and rapidly to its peritoneal covering. Now from the peritoneal coat of these diverticula to the peritoneal coat of the colon, in close proximity to it, the spread of the inflammatory process is easy; and thus a local circumscribed inflammation is set up. By this explanation we avoid the objections raised above to the two previous hypotheses. For in only a small proportion of habitually constipated persons are these sacculi found, and in only a small proportion of habitually constipated persons does pericolitis occur; and, further, as the mucous membrane of the colon is not involved as a whole, there is no reason, why there should be diarrhœa. The exact relation, however, between the association of sacculi and pericolitis cannot be determined, till more cases have been reported on post-mortem.

Up to the present two cases have been recorded by Rixford,[12] and two more by Rolleston,[13] and recently there has been a similar case in St. George's Hospital, the history of which runs as follows:—

C.S., a caretaker, aged 57, was admitted into St. George's Hospital on October 3rd, 1906, with all the signs and symptoms of acute general peritonitis. Two days before admission he had taken some castor oil, and soon after "felt something go in his inside." There was a history of chronic constipation. Nothing was found to indicate the origin of the trouble, and the abdomen was opened over the appendix, and was found to be filled with a dirty-brown, sour-smelling liquid. The appendix was adherent, but obviously not the cause of the trouble. There were adhesions in the lower part of the abdomen. A subumbilical incision on the left side was then made, and the gut in the left iliac fossa was found bound down by adhesions, and covered with sloughy lymph. In the pelvis a piece of colon was found which was perforated. Tube and gauze-drain inserted; but patient died 5½ hours after operation. At the autopsy there was general severe, septic peritonitis. The large bowel on the left side was firmly bound down by old adhesions, and there was much matting in the pelvis. On the antero-external surface of the commencement of the sigmoid there was a small perforation with chronically thickened edges, which was found to lead into a stercoral pouch with which the large bowel from the cæcum to the rectum was plentifully supplied. There were no signs of malignant disease.

If the inflammation be severe, suppuration may occur in or around these sacculi, and circumscribed abscesses be formed around

the colon, or as occurred in the case mentioned above, these stercoral pouches by perforating directly into the peritoneal cavity may set up general peritonitis. A somewhat similar group of cases are those due to the perforation of a foreign body in its passage through the wall of the intestine in the neighbourhood of an epiploic appendix. Bland-Sutton [3] records the following case:—

A man, aged 40, was seized with acute pain in the left iliac region, with tenderness and fever. The signs were such that, if they had occurred in connection with the right instead of the left iliac region, a diagnosis of subacute appendicitis would have been irresistible. A diagnosis of abscess of the descending colon, probably depending on perforation, was made, and on opening the abdomen an ovoid body as large as a bantam's egg was discovered lying smooth and sessile on the descending colon. The tumour proved to be an inflamed epiploic appendix, and it contained a distinctly circumscribed cavity in its centre, which communicated by a narrow channel with the lumen of the intestine. The cavity was filled with inspissated fæcal material, in which was embedded a sharp foreign body that appeared to have made its way out of the colon. Bland-Sutton explains the sequence of events as follows:—A foreign body was swallowed with the food; the foreign body perforated the colon in the neighbourhood of an epiploic appendix, and this caused a slight leakage of the contents into the epiploic appendix, infected it and afterwards set up inflammatory changes, which increased the size of the fatty fringe, leading to a chronic inflammation.

Cuff [4] has recorded a somewhat similar case, in which a small piece of straw perforated the ascending colon and set up actinomycosis, surrounding the ascending colon and involving the abdominal wall. The mass was easily separated from the colon except at one spot, where it was firmly adherent, and the peritoneum was torn in removing it. There was no pain at all during the course of the disease, and no history of constipation. The ray fungus was easily demonstrated by the microscope. The man made an uninterrupted recovery.

It is rather surprising that these cases of perforation of the colon by foreign bodies do not occur oftener, as all sorts of foreign bodies are constantly ingested with the food, and, as Bland-Sutton points out, the method of grinding wheat furnishes minute angular particles of millstone, which with small fragments and chips of straw are not uncommon in flour and in bread.

Injury is another cause of pericolitis. D'Arcy Power records two cases in which the exciting cause was injury to the abdominal wall.

The first was in a married woman, aged 38, who worked in a laundry, and had been on several occasions kicked in the abdomen, the last occasion being two months before she came under observation. Her injuries had never been severe enough to make her stop work. She had always been a healthy woman, and her bowels acted regularly. Her present illness started on January 12th with sudden pain in the abdomen. On January 22nd there was some rigidity of the abdominal muscles on the left side, and a tumour, which was tender on palpation could be felt on the left side of the abdomen above the umbilicus. The swelling was circumscribed, and could be moved from side to side. Her temperature was 102°F., and her pulse 128. A blood count showed a leucocytosis of 18,500. She had one attack of vomiting on January 13th. On January 28th laparotomy was performed, and as soon as the peritoneum was opened pus escaped, and a large abscess cavity was found, extending backwards towards the posterior wall of the abdomen and downwards along the inner side of the descending colon. The cavity was drained, and she made an uninterruptedly good recovery.

The second case was in a scene-shifter, aged 58, who had been struck in the abdomen four months previously, whilst doing his work. When examined there was tenderness and rigidity over the left rectus, where a deeply-seated and indefinite swelling could be felt. Patient refused operation, and ten days later the abscess burst and discharged itself into the bowel. Two pints of foul black stuff were passed, and patient recovered.

In these two cases it is interesting to note the absence of constipation and the length of time which supervened between the receipt of the injury and the onset of symptoms of pericolitis.

Other causes are leakage from ulcers of the large intestine, such as typhoidal and stercoral, whether simple or occurring above a stricture, which is usually malignant.

To sum up, we see the causes of pericolitis are various. First and foremost comes constipation, which acts either by setting up an inflammation of the wall of the intestine, or by causing small abrasions in the mucous membrane, or by disposing to sacculi or stercoral pouches. Next, we may put perforation of the intestine by small foreign bodies ingested with the food, and injuries received from without; and finally, leakage from typhoidal, stercoral, or other ulcers of the intestine.

These are not all the causes, for there is another and a large class of cases, which may be grouped together under the title of secondary pericolitis. In these the inflammation does not arise in the wall of the colon, but originates in neighbouring viscera, and from them spreads to the colon. These viscera are, as might be expected, those in close relation to the colon, such as the kidney, spleen, liver, bladder, the generative organs, or some part of the intestine other than the colon.

Even with the addition of this last group it is doubtful if this list can account for all the cases of pericolitis, for D'Arcy Power records two cases, which commenced with rigors, and ran a pyæmic course, without any gross lesions being found after death.

Symptoms. Speaking broadly, like all inflammatory affections, it may resolve, may become chronic, or may suppurate. Rolleston has divided his cases into three main groups—(1) local peritonitis of comparative slight intensity; (2) local abscess; (3) general peritonitis.

The cases under the first head may be divided again into two sub-groups. (a) Cases which resolve, leaving little or no trace of their existence; and (b) cases which become chronic. The following case of Rolleston's is a very good example of group (a).

A man, aged 23 years, was admitted into St. George's Hospital on August 8th, 1904, with acute rheumatism. He had been in hospital in 1902 with a previous attack of rheumatism, also complicated by abdominal manifestations similar to those described below. As a result of treatment the temperature rapidly fell, but after his bowels had been obstinately confined for four days he was seized with abdominal pain in the left iliac fossa, where there was much resistance, and an oval patch, three by two inches, of hyperæsthesia. There was no tenderness or pain in the right iliac fossa. The abdomen moved badly, and the patient lay with the legs drawn up. Next day the pain was worse, and vomiting occurred twice; the pulse was 92, the the temperature was 101°F., but the latter was probably due to a relapse of the rheumatic pains, and not to the abdominal condition. On the following day, after the bowels had been freely opened as the result of enemata, the abdominal pain diminished, and after this, the bowels being kept regularly open, the abdomen became natural.

This is the simplest form in which pericoiltis occurs, and constipation is invariably the exciting cause. When the bowels are

kept acting freely the symptoms subside. Probably in most cases of fæcal impaction there is also associated a slight, and if the impaction is relieved, transient attack of pericolitis. It is extremely difficult to draw a hard and fast line between cases of fæcal impaction with a slight amount of pericolitis, and cases of fæcal impaction without this complication.

In group (b) constipation is also the most common cause, but the course of these cases is not so simple, nor are the effects so transitory, in fact, such a serious complication as intestinal obstruction may occur.

Cæcum and Ascending Colon.

(*a*) Appendix; (*b*) cæcum distended; (*c*) hepatic flexure; (*d*) adhesions binding hepatic flexure to the posterior abdominal wall. (After Arbuthnot Lane.)

Arbuthnot Lane[7] has made a study of these cases, and says he has often seen on the operating table the ascending colon, especially near the hepatic flexure, bound down to the abdominal wall by adhesions the result of constipation. The effect of these adhesions is in some cases to cause intestinal obstruction (the subjoined diagram illustrates their mode of action) in others to give rise to pain from dragging on the ilio-lumbar, ilio-hypogastric,

and last dorsal nerves, which may lead to a mistaken diagnosis of renal calculus. Not infrequently operation has been performed, and the kidney explored, without the discovery of a stone, but with the subsequent relief of the pain. And this, he suggests, is brought about by the breaking down of the adhesions, thus freeing these nerves from the traction to which they were being subjected. This hypothesis may also account in some cases for the symptoms attributed to the condition known as "tight capsule."

Other cases, he says, have been operated on for appendicitis. In some of these the appendix was found to be normal, in others slightly diseased. After its removal the symptoms have continued, and have then been relieved by dividing the adhesions round the hepatic flexure of the colon. In cases in which a diseased appendix has been removed, and yet the symptoms have continued, he suggests that the appendix was affected secondarily to the obstruction round the hepatic flexure, which caused stagnation of fæces in the cæcum; for after division of these adhesions at a subsequent operation the symptoms have disappeared: but unless the bowels are kept acting regularly the adhesions form again. Such adhesions may occur also in the descending colon, binding it down to the posterior abdominal wall. Its walls become thickened, and, in cases where they are sufficiently thickened to cause a palpable tumour, it is extremely difficult to diagnose the condition from one of malignant disease. The following case illustrates this point.

A man, aged 48, a scaffolder, was admitted on November 12th, 1900, under the care of Dr. Rolleston, suffering from pain in the abdomen and vomiting. He said that the symptoms began ten weeks ago, since when he had mostly kept to his bed. He had constant vomiting after his food, and had latterly been losing weight. His bowels were very irregular. On admission his temperature was 100, and his pulse 80. His abdomen moved little on respiration, and its walls were rigid. A large tumour, extremely tender, was felt in the left hypochondrium and left lumbar region; it was fixed and did not move on respiration, and was dull on percussion. After being some days in the hospital patient improved slightly. His bowels were opened with the greatest difficulty by enemata, but as his temperature remained up and the pain in the abdomen continued, he was transferred to the surgical side. On December 1st the abdomen was opened over the tumour, and a large mass firmly adherent to the abdominal wall and neighbouring intestines was found. It appeared to be breaking down in the centre, and was

thought to be a malignant growth. A small portion was removed for microscopical examination, and the abdomen was closed. (The tissue removed was reported as being a small round-celled sarcoma, but the progress of the case, the man being in good health six years later, shows that it must have been granulation-tissue.) After the operation a fæcal fistula developed, the temperature gradually came down, and the wound healed firmly. On January 13th patient left the hospital greatly improved. On his discharge the mass on the left side had greatly diminished in size. Patient was seen again last year, and all traces of the tumour had disappeared. He came up to hospital again as he had symptoms similar to those on his previous admission, but they soon, however, disappeared.

Possibly such cases account for some of the so-called marvellous cures of malignant disease affected by quack remedies.

A good example of pericolitis of a chronic nature causing intestinal obstruction is the following case taken from the records of St. George's Hospital.

A man, aged 36, was admitted on December 12th, 1903, complaining of dyspepsia and colicky pains below and to the left of the umbilicus, from which he had been suffering for four weeks. For the last fourteen days his bowels had only been very slightly opened, but previously to this he said he had not been constipated. He had had occasional attacks of vomiting. His temperature was 100·8°F., and his pulse 120. He had the abdominal face. His abdomen was much distended. There was no tenderness. No visible persistalsis and no abnormal swelling palpable. He was operated on immediately, and when under the anæsthetic an indefinite mass was felt in the splenic region. A temporary typhlotomy was performed, and much gas escaped. During the next few days patient gradually improved. His abdomen became flaccid, and he ceased to vomit. He passed normal stools per rectum, and the typhlotomy wound healed up. His temperature, however, remained raised, and an irregular ill-defined tumour could be felt in the splenic region.

On January 2nd the abdomen was again opened over the swelling; the intestines were much matted, and a mass was found adherent to the splenic flexure and descending colon. This was separated with difficulty from the colon, and in doing so the peritoneal and subserous coats for about an inch of the descending colon were torn. These were sewn up, and the tumour was then removed. Subsequently there was a slight fæcal discharge from the wound, but on January 30th it was firmly healed. The bowels acted regularly, and the temperature came down to normal, and the patient left the hospital on February 2nd. For a week previous to his leaving the hospital the greatest difficulty was experienced in getting his bowels to act, but before he left they were acting regularly. A microscopic examination of the mass removed showed it to be inflammatory. No signs of malignant disease or of tuberculosis.

In Class II. are grouped the cases of local abscess.

These abscesses may be intra- or extra-peritoneal; and an example of each variety has been recorded by Rolleston in his paper on pericolitis sinistra. They may vary in size from small abscesses, containing small quantities of pus and giving rise to purely local symptoms, to enormous cavities surrounding the colon and extending from the pelvis to the diaphragm, and associated with the most profound constitutional disturbance.

Simple constipation without the formation of sacculi is apparently not sufficient to bring about this condition. As we have seen above they are usually due to:—

(1) The formation of an abscess in an acquired diverticulum, which may be confined to the diverticulum or spreading may so form an abscess surrounding the colon.

(2) Perforation of the intestinal wall by small foreign bodies (Bland-Sutton [3]).

(3) Injuries.

(4) Leakage from ulcers of the intestine, where the extravasation of the intestinal contents has taken place slowly and has not been rapid enough or in sufficient quantity to cause general peritonitis.

In all these cases there is some fever and perhaps occasional vomiting associated with the presence of a tender tumour in the course of the large intestine. But in cases of extra-peritoneal abscesses, even when they are large, it may be impossible to demonstrate the presence of a tumour by palpation.

The last group of cases is made up of those of general peritonitis which may be brought about in one or two ways, either (1) by the bursting into the general peritoneal cavity of an abscess previously localised, or (2) by the giving way of the base of an ulcer, whether the ulcer be in the wall of the colon or in an acquired diverticulum. Numerous cases of the latter kind have been recorded. Beer [1] mentions four and a case previously recorded in his paper affords another similar instance.

To sum up. Constipation may give rise to a purely transitory pericolitis, which disappears when the constipation is relieved, and which is closely associated with cases of fæcal impaction. On the other hand the inflammation may be more severe, giving

rise to adhesions and thickening of the wall of the large intestine. These adhesions may cause intestinal obstruction, or may give rise to symptoms closely resembling those of renal calculus or appendicitis. Further the thickening of the intestinal wall is very apt to give rise to a mistaken diagnosis of malignant disease.

In cases of chronic constipation associated with sacculi, abscesses may be formed which may be either extra- or intra-peritoneal, small or large, and which may remain encapsuled or may burst and cause general peritonitis.

The remaining causes of abscess formation being:—

(1) Perforation of the intestine by foreign bodies.
(2) Injuries.
(3) Leakage from ulcers of the intestine.

And finally general peritonitis may be caused by the perforation of one of the ulcers, or the giving way of an ulcerated diverticulum.

Treatment. In simple cases rest in bed and the relief of constipation by enemas, or, if necessary, in some cases of fæcal impaction, by removal of the scybalous masses by mechanical means, is all that is necessary; with hot fomentations or an ice bag, if the pain is severe.

Similar treatment is called for in the chronic cases leading to adhesions and thickening. Rest in bed is important, for in the recumbent position less resistance is offered to the passage onwards of the contents of the ascending colon. In some cases, however, it is necessary to open the abdomen and divide the adhesions, being very careful afterwards to keep the bowels acting freely, for if constipation occur again the adhesions may re-form.

In intractible cases in this class Mr. Arbuthnot Lane has advised anastomosis of the ileum to the sigmoid flexure or rectum, and in cases of chronic obstruction in which the obstruction is not relieved by enemas, rest, and other methods, operation is always necessary. Whenever abscess is diagnosed the abdomen should be opened and the abscess drained and operation should be undertaken immediately in the presence of general peritonitis, with the object of closing the perforation if possible, and providing efficient drainage.

I am much indebted to the Physicians and Surgeons of St. George's Hospital for so kindly allowing me to publish the cases under their care.

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CHRONICLE.

Medicine.

KROUG (E.). **Basedow's or Graves' Disease.** *St. Petersburg. med. Woch.*, 1906, p. 402.

THE three first described signs of Graves' disease were exophthalmus, goitre, and tachycardia. Later writers have added 10 more, and Kroug recognises 13 cardinal signs of Graves' disease, dividing them into two classes—the local and the general. If one or more of the local signs (viz., exophthalmus, goitre, tachycardia, Von Graefe's sign, Stellwag's sign, and Möbius' sign) and two or more of the general signs (viz., sweating, tremor, thermophobia, wasting, anæmia, intestinal crises, and sleeplessness) are present, Kroug diagnoses Graves' disease. In addition, he notes that various other morbid phenomena may appear: trophic changes in the skin, vitiligo, pigmentation, falling out of the hair, œdema of neurotic, toxic or cardiac origin, respiratory disturbances, tachypnœa, impotence, amenorrhœa, a tendency to abortion, cramps, paralyses and psychical disturbances of many kinds.

Kroug gives an analysis of the signs presented by the 106 cases of exophthalmic goitre he has seen. Eighty-seven of the patients were women, 19 men. Most of the women affected were between the ages of 20 and 50; most of the men were between 10 and 30. Tachycardia occurred in 94 patients, and the disappearance of tachycardia while the other signs remain unchanged Kroug holds to be of bad prognosis; sweating was noted in 89 of the patients, and tremor in 86; Kroug believes that it occurs in all the cases at one time or another. Goitre was noted 84 times, being bilateral in 79 of the cases; thermophobia (Charcot), or feelings of distress in warm rooms or in sunshine, came next; wasting was observed in 51 of the cases; exophthalmus in 45, unilaterally in 14 (left eye 10, right eye 4). Von Graefe's sign was found 42 times, 24 times with and 18 times without exophthalmus; it was unilateral 5 times. Stellwag's sign was not constantly looked for; Möbius' sign was seen in 39 patients, but Kroug believes that it is really far commoner than his figures show. The intestinal crises of diarrhœa lasting for days, weeks, months, or even years, with 2—4 evacuations a day, come next in frequency, and are uninfluenced by diet. Sleeplessness was present in 34 of the patients; Kroug remarks that his patients did

not look anæmic as a rule. He recorded nystagmus thrice, polydipsia twice, frequent vomiting twice, splenic enlargement twice, and pruritus once.

Only 10 of his patients were severely attacked, and only 2 died. Kroug believes that arsenic and iron are the most useful drugs for the treatment of Graves' disease; he strongly recommends galvanisation of the vagus and sympathetic with galvanic currents up to 2 milliamperes for 10—15 minutes, using a 2-inch anode, throughout long periods (months). He has no experience of the serum treatment. Digitalis, strophanthus, and caffein are contra-indicated, unless heart-failure appears. Iodine and thyroidin are distinctly harmful. Bromine preparations may be useful as palliatives. In general the patient should be treated with (1) complete bodily and mental repose; (2) a rich diet with very little meat and no excess of fat; (3) in a cool room, with (4) plenty of fresh air; (5) at an altitude of 3,000—5,000 feet, or (6) at the seaside; (7) mild hydrotherapy, baths at 86°—91°F. Of the surgical treatment of Graves' disease Kroug has had no experience. He notes that there is an obstinate tendency to relapse, and that any treatment should be long continued.

Trousseau believed Basedow's disease to be a dyscrasia of the blood, very analogous to chlorosis. Köben, Gros, and Piorry supposed it due to pressure on the cervical sympathetic. Gauthier (1886) referred it to the secretion of some pathological substance by the thyroid gland. Möbius enlarged and defined this idea more precisely in 1891. It is now supposed that in all cases of Basedow's disease the secretion of the thyroid gland is increased in amount; Kroug devotes considerable space to discussing the probable nature of the biochemical disturbances in the function of the thyroid gland that produce the endogenous toxicosis known as Graves' disease.

A. J. Jex-Blake.

Daireaux (P.) **Paralyses in the Pneumonia of Adults.** *Arch. gén. de Méd.*, 1906.

In old people suffering with pneumonia it is not rare for cerebral hæmorrhage or softening to occur, with hemiplegia and uniformly fatal result; in some cases no anatomical basis for this hemiplegia can be found post-mortem. But in younger adults grave functional nervous lesions may appear during the course of or convalescence from pneumonia, and these cases uniformly recover.

Daireaux states that 11 cases of transitory pneumonia hemiplegia during the course of an attack of pneumonia are to be found in the literature, and adds a twelfth. A young soldier had an attack of bronchial influenza on February 15th; on the 18th this turned to a double broncho-pneumonia. The temperature fell on the 22nd, and on the 23rd the patient had an apoplectiform attack with incomplete loss of consciousness; a right hemiplegia appeared, the arm was flexed, the hand closed, the leg straight; no stertor or deviation of the head or

eyes were noted, nor was there any facial paralysis or hemianæsthesia. Consciousness returned in a few minutes, when an injection of ether was given. In two hours' time the contracture of the right arm passed off; the leg was flaccid, and motor aphasia (incomplete) appeared and lasted eight days. The temperature rose; the patient complained of headache, but showed no other signs of meningitis; Kernig's sign was present for four days, and the vesical and anal sphincters were incontinent for a week. On the 24th the patient's legs became contracted like gun-hammers, and remained so for eight days, during which agraphia was present. Lumbar puncture, performed on the 28th, yielded a clear fluid The reflexes were normal; the pharynx was anæsthetic, but no other sign of hysteria could be found; the visual fields were normal, and the face was rendered asymmetrical by a right facial hemispasm. By April 2nd the patient had recovered completely but for a slight facial hemispasm.

Boulloche (Thèse, Paris, 1892) states that most of these hemiplegias in pneumonia are really hysterical, being associated with exemption of the face, a brief aphasia, flaccidity of the limbs, and often hemi-anæsthesia. Daireaux's patient was emotional, his father and grandfather had suffered from nervous crises and alcoholism. Daireaux thinks that there was an element of hysteria in the case given above, together with either meningism, or infectious œdema of the meninges, or infectious intoxication of the psychomotor cells of the cortex.

He also notes that peripheral neuritis may occur during or after pneumonia, and gives the details of a case of poliomyelitis affecting the legs and arms that appeared during convalescence from an attack of lobar pneumonia. There was much wasting of the muscles; little tenderness of the nerve trunks, and complete recovery occurred in three months.

A. J. Jex-Blake.

Lehmann (C.). **A case of Chloroma.** *St. Petersburg. med. Woch.*, 1906, p. 411.

The patient, a young man of 19, bled from his gums on February 7th, and soon afterwards developed a purpuric rash. He felt very well in himself, but the bleeding continued. A fortnight later he had an upper molar extracted, and bled freely. The hæmorrhage was stopped with difficulty, and the patient was brought in a state of collapse to the hospital.

His previous history showed little of importance; syphilis was denied. His blood was leukæmic, with 35 per cent. hæmoglobin (Tallqvist). He had pains in his long bones; his sternum and tibiæ were tender to pressure; faint cardiac murmurs were audible at first, but disappeared later.

The patient became blind in the right eye, and died with increasing feebleness on March 1st. At the obduction the pleuræ showed numerous ecchymoses, and a few nodules, as large as peas, that were green on section. Similar nodules were found in the right kidney, and the

splenic flexure of the colon was stained a dirty green. Numerous enlarged lymphatic glands were found in the mesentery along the spinal column, showing a clear green colour on section. The marrow of the right femur was bright green, that of the sternum dirty green. The spleen was enlarged to twice the normal size; the liver and other organs exhibited no noteworthy changes.

Microscopically, the green part of the colon showed infiltration with small round cells. The nodules in the kidney and pleuræ were similarly composed of aggregations of small round cells. The enlarged lymph-glands contained large mononuclear round cells, red cells, cellular débris and blood pigment; the picture being one of infiltration rather than of hyperplasia of the lymphatic glands. A spongy mass filled out the right orbital plate, and was mainly composed of large cells with single bladder-like nuclei. The bone-marrow contained very little fat, and many large round cells with a few eosinophiles, and numerous nucleated red cells.

Lehmann gives numerous references to the literature, and a short discussion about the etiology of chloroma, which has been described as a lymphosarcoma (Ziegler), a round-celled sarcoma, or a lymphomatous new growth (Borst).

A. J. Jex-Blake.

Fox (R. H.). **Hæmatogenous Albuminuria.** *Lancet*, August, 25, 1906, p. 497.

A. E. Wright's work has produced strong grounds for the belief that this kind of albuminuria, also called transient, functional, cyclical, etc., is due to a disorder of the blood, the outstanding feature of which is lessened coagulability (diminished viscidity). The evidence for this may be summarised as follows:—(1) In four subjects of this form of albuminuria the coagulation time of the blood averaged one minute fifty seconds. It is well known that salts of calcium increase the coagulability by promoting the formation of fibrin. By the administration of calcium lactate to these four subjects the time was reduced to an average of one minute twenty seconds. The albumin had then disappeared from their urine. (2) In four cases of albuminuria with signs of disease of the kidneys or urinary passages the average coagulation time was one minute thirty seconds, and it was reduced by the administration of calcium lactate to an average of fifty seconds. The albumin was unchanged or somewhat increased in amount. (3) The functional efficacy of the kidneys was demonstrated to be unimpaired in seven of the first class of cases by the determination of the "excretory quotient," which is a measure of the power of the kidney to elaborate out of the blood a concentrated saline solution. In the four cases of the other class it was found to be lowered greatly. (4) The subjects of the form of albuminuria in question has usually been undergoing rapidly bodily growth, in which there is a demand for calcium, especially for bone formation, so that a deficiency of this substance in

the system is likely to occur. (5) Experience has shown that a milk diet which is rich in calcium cures the albuminuria in many cases. (6) Wright ranges this symptom with a class of other "serous hæmorrhages" dependent on transudation of serum and associated with lessened coagulability of the blood; amongst these are urticaria, chilblains, and forms of headache, œdema, and weeping eczema. It is not the rule for these disorders to occur in the same subject, so that it seems that one person is vulnerable in his skin, another in his meninges, another in his kidneys; and thus far a kidney weakness may be postulated in those who have hæmatogenous albuminuria.

The control of the albumin by the use of calcium lactate, the absence or great diminution of the albumen in the night urine, the absence of renal casts and epithelium are the chief clinical tests for the disease. Fox has used the calcium test in sixteen cases of albuminuria indiscriminately. In seven the albumin disappeared or was reduced to a small trace after the taking of the lactate. These were, he believes, all instances of hæmatogenous albuminuria. In the remaining nine the albumin persisted; in most of these cases signs of kidney disease were present, but in two or three the albumin may have been hæmatogenous, needing a longer course of the calcium salt for its removal.

In the treatment of albuminuria rest in bed, a milk diet, saline purgation, iron and nux vomica—tonics for the blood and nervous system—have done much good. The value of milk is probably due to the calcium it contains; and the salines produce a watery osmosis which renders the blood more concentrated. Alcohol should not be given, for it is a "lymphagogue," and is suspected of producing the disorder. The direct use of calcium lactate gives us a new and effectual means of altering the blood state on which the transudation of albumin depends. It is needful in some cases to continue its use over a long period. Nias has recently studied a case in which calcium salts were not absorbed, but those of strontium and magnesium were absorbed with facility, and had a coagulative effect. It would be well to try a dose (15 to 30 grains) of strontium lactate when the albuminuria is refractory to the calcium salt.

E. M. Brockbank.

Piéry (M.) and Jacques (A.). **Pulmonary Adenopathics, an anatomical, radioscopic and clinical study.** *Rev. de Méd.*, 1906, p. 664.

By anatomical and radioscopic investigations differences can be seen between pathological changes in the pulmonary (root and intrapulmonary) and in the mediastinal and tracheal lymphatic glands, but the former glands alone, owing to their direct connection with pulmonary lesions, afford any information as to the state of the lungs. In all pulmonary affections, whether tuberculous or not, the glands are found, post-mortem, to be more or less developed, enlarged, or numerous

according to the severity of the lung affection. Calcareous glands indicate an old, and certainly healed tuberculosis; sclerosed glands point to a more or less healed old tuberculosis; whilst caseous masses are significant of old foci of disease still in a process of evolution.

To make a satisfactory radioscopic examination of the glands it is necessary to have a movable tube, a good diaphragm, and rays of lesser penetrating power. Whilst tracheal glands require an oblique-lateral examination, pulmonary glands are made out best on a screen by antero-posterior illumination; they appear on each side and at a certain distance from the vertebral column, in the form of a rectilinear band, slightly oblique from above downwards and outwards, beginning from the 7th rib (posterior projection); they are much more frequent on the right side, and best seen by an anterior examination of the chest. The appearance of these pathological glands is very different, according to whether the lesions are recent or old. Roughly, the changes may be grouped as follows:—

1. Homogeneous band, pale or cloudy; this corresponds with inflamed and hypertrophied glands, and is seen in every pulmonary affection, non-tuberculous or tuberculous (progressing fibro-caseous tuberculosis, caseation).

2. Moniliform band, black spots on dark background; this signifies calcified and possibly fibrous glands with inflamed glands, and occurs in abortive tuberculous conditions, and in the fibro-caseous tuberculoses in which successive attacks have occurred.

3. Nummular spots, black, rounded with sharply limited contours; these spots correspond with calcareous, fibrous or fibro-caseous glands without inflammatory lesions, that is, in so-called latent tuberculosis.

The practical deductions which the clinician can draw from radioscopic examination have a diagnostic and prognostic value.

1. By this method of examination changes in the pulmonary lymphatic glands are diagnosed which otherwise would be unrecognised. In a case of pulmonary tuberculosis, the clinical nature can be differentiated. Finally, and especially, it furnishes an element of retrospective diagnosis in cases of latent tuberculosis.

2. From the prognostic point of view, the mode of evolution of the disease can be defined, either by fixing the degree of severity of the bacillary process, or in making a distinction between active or passive lymphatic gland lesions.

DONALD CORE.

ROLLESTON (J. D.). **Precocious Paralysis of the Palate in Diphtheria.** *Rev. of Neurol. and Psych.*, September, 1906.

THE present paper is on observations made on 1,000 consecutive cases of diphtheria that were under the writer's care at the Grove Fever Hospital during the course of the last four years. Paralysis of the palate occurred in 162 cases (16·2 per cent.). The average date of occurrence was towards the end of the third week (18·3 day among

162 cases). The term "early" or "precocious" has therefore been applied to such palsies as developed before the beginning of the third week. Fifty such cases among the 162 were so termed.

Precocious palatal palsy in diphtheria is almost invariably associated with malignant forms, as is shown by the high mortality, the association of other grave symptoms during the acute stage, and subsequent more frequent development of paralysis in convalescence in the cases in which it occurs. It resembles the ordinary forms of diphtheritic palsy in its tendency to be frequently incomplete, and by its higher incidence among young persons. It is, as a rule, of much longer duration than the palatal affection which occurs at a later date.

E. M. Brockbank.

Gongerot (M.). **The last venues of Tuberculous eruptions.** *Gaz. des Hôpitaux.* August 1, 1906.

The name "toxi-tuberculide" has been given to a series of atypical tuberculous skin affections, in which the lesions themselves are free from tubercle bacilli, but are supposed to be due to toxins generated by tuberculous foci elsewhere. The list of these affections as classified by Hallopean is a long one, and includes several already well-known disorders, such as Bazin's disease and lupus erythematosus. The present writer deals only with certain rarer conditions, which he attempts to bring into line as tuberculides. One of these is the "*Sarcoide hypodermique*" of Darier-Roussy. This disease appears to have been seen only in young women of tuberculous history. The lesions begin as sparsely distributed shot-like nodules beneath the skin, to which they are adherent. The overlying cuticle is often lilac-tinted, and the nodules are sometimes painful and tender. Their course is extremely chronic; they never ulcerate. Microscopically, their structure is seen to be similar to other tuberculous lesions, but there is complete absence of bacilli. They give reactions to tuberculine.

Darier's "lupoid" appears to be another rare condition seen in men between the ages of 36 and 64. The eruption is polymorphic, and the clinical appearance of the lesions varies greatly with their site. They usually appear first on the limbs, and may spread to the trunk, face and scalp. They are nodules firmly embedded in the skin itself, varying in size up to a diameter of 20 m.m. At first they are bright-red, then violaceous, yellow or brown. On the face the nodules may be depressed in the centre, and covered with a dark adherent crust. Lesions are seen everywhere in different stages of evolution. They react to tuberculin, and have a tuberculous structure, but are bacilli-free. It becomes an interesting speculation whether certain cases of *keloid* can be classified as tuberculides. On the whole, histological examination points to the inflammatory origin of this condition. Darier gives several arguments in favour of a microbic infectious theory, amongst which we may cite—(1) "sudden onset, sometimes immediately after cicatrisation of the primary lesion, sometimes long after on an old

cicatrix, after the manner of a secondary infection"; (2) the eruption at a distance of small keloids previously free from cicatrices or other lesions, after scarification of a keloid, suggesting that infectious agents have been thereby disseminated; (3) the appearance of keloid in certain suture-points.

In young keloids, before fibrous formation is complete, abundant cell-formation is found round the vessels and as far as the limits of the tumour, and even giant-cells are seen. Inoculation experiments have in certain instances produced a generalised tuberculosis, and in certain young keloid tumours even tubercle bacilli have been seen.

G. H. Lancashire.

Biondi (C.). **Pneumoconioses and Intoxications.** *Riv. crit. di clin. med.*, No. 38, 1906.

Following up Behring's idea that tuberculosis of the lungs might be due to infection through the intestine, Vansteenberghe and Grysez (1905) proved that powdered carbon or Chinese ink introduced directly into the stomach of the guinea-pig could produce pulmonary anthracosis; with young guinea-pigs the experiment did not succeed. They also showed that rabbits caused to breathe a smoky atmosphere developed a marked anthracosis of the lungs, which was, however, absent if the œsophagus had first been ligatured in these animals; and, finally, that the tamponnage of a bronchus did not protect the lung supplied by it from anthracosis if the animal was caused to inhale black smoke and the œsophagus was not ligatured.

This gastro-intestinal origin of pneumoconiosis has been recognised for long (Oesterlen, 1846). Some of the experiments described above have been successfully repeated by Leoncini and also by Biondi. Biondi gives some of his results in detail; he found that when full-grown animals were made to inhale air loaded with the powder of black graphitic schist, the granules of graphite were soon carried to all parts of the lung-tissues. But if these inhalations were given repeatedly the powder could also be found in the alveoli and on the mucous membrane of the bronchi; while bronchitis and small areas of broncho-pneumonia were also developed. Biondi further noted that powdered calamine ($=ZnCO_3$) or blende ($?=ZnS$ blackened by FeS, or $=PbS$?) given by the mouth did not produce any pneumoconiosis; but that if these powders were administered as inhalations, they did reach all parts of the lung and lung-tissue, also causing bronchitis and a few areas of broncho-pneumonia to appear. He therefore concludes that it is only the chemically inert powders that are carried from the gastro-intestinal tract to the lungs; and that substances like this blende or calamine, that may be dissolved in the body and prove toxic, are not carried on to the lungs in the same way.

A. J. Jex-Blake.

URBINO (G.) **Jellinnek's Sign and the Iron in the Blood in Basedow's disease.** *Riv. crit. di clin. med.*, Nos. 38 and 39, 1906.

IN 1904 Jellinnek remarked that persons suffering from Basedow's disease exhibited a more or less intense brownish pigmentation of the eyelids; the upper lid is most affected, while the conjunctiva escapes altogether. This pigmentation usually appears early in the disorder, and varies in degree from time to time in any given case; it does not disappear. Jellinnek also found that the blood of these patients contained more hæmoglobin and less iron than does normal blood; while it is known that in various other diseases the Hb and Fe of the blood vary together *pari passu*.

Urbino quotes various authors who have found that the pigmented skin taken from the pigmented patches sometimes developing in the course of pregnancy *(hyperchromia gravidica)* does not give the microchemical reactions of iron. He also notes that normal blood contains 0·041—0·05 per cent. or iron. He has examined the blood of five patients with goitre and two with exophthalmic goitre, estimating the iron by Jolles' ferrometer; the Hb was 82 per cent. and 100 per cent., the Fe 0·025 per cent. and 0·031 per cent. in the two cases of Basedow's disease. In the five cases of simple goitre the Hb was 44 per cent., 108 per cent., 85 per cent., 78 per cent., and 85 per cent., while the Fe was 0·028 per cent., 0·050 per cent., 0·040 per cent., 0·019 per cent., and 0·0475 per cent. Brownish symmetrical facial pigmentation was observed in each of these five cases, and in one of the two cases of exophthalmic goitre. Urbino thinks that this pigment is not directly hæmatogenous, and that its deposition is connected with modifications in the "metameric innervation" of the parts.

A. J. JEX-BLAKE.

EBSTEIN (E.). **Clubbing of the Finger-tips.** *Deutsch. Arch. f. klin. Med.*, 1906, 89, p. 67.

THE author gives a thorough and careful résumé of the subject and its literature, discussing its clinical significance. Clubbed fingers are known in Germany as "drum-stick fingers"; in France they have many names, and were called "Hippocratic fingers" by Pigeaux (1832). Hippocrates (*Prænot. Coac.*, No. 402) described curving of the finger-nails in chronic empyema, but made no reference to the thickening of the terminal phalanx which is the chief characteristic of clubbed finger-tips. Caelius Aurelianus (A.D. 200) was the first to make mention of this clubbing; and during the last 300 years references to it have been fairly frequent: in 1832 J. Pigeaux gave a careful account of the condition, and since then much has been written about it. P. Marie in 1890 described it as a part of his pulmonary hypertrophic osteo-arthropathy, a new disease.

At the present time the "Hippocratic finger-tips" are still confused with "clubbed finger-tips"; it is true that clubbing is often associated

with curvature of the nails, but the two conditions are really quite distinct. Clubbing of the toe-tips is common, and is usually due to the use of ill-fitting boots; the second toe is particularly liable to such clubbing.

Several authors have suggested that emaciation plays a large part in the production of Hippocratic fingers; this, however, appears not to be the case, as practically it occurs only in cases where the emaciation is due to chronic pulmonary disease, and because it often appears before the emaciation. The two chief theories of the production of clubbed or of Hippocratic fingers are, firstly, that it is due to the circulation in the blood of a toxin derived most commonly from some septic process occurring in the lungs; and, secondly, that it is a consequence of congestion due to some obstruction in the circulation of the finger-tips. The condition has been seen to appear in all the fingers of a man of 35 with empyema within two weeks, and to disappear again in three months. But there are cases in which clubbed fingers are associated neither with pulmonary disease nor with venous congestion of the fingers; thus clubbed fingers have often been observed in patients with cirrhosis of the liver who were free from cardiac or pulmonary disorders, in autotoxic cyanosis of intestinal origin, and in pyelonephritis.

Ebstein devotes several pages to Marie's pulmonary hypertrophic osteo-arthropathy, which is better called "secondary hyperplastic ostitis" (J. Arnold, 1894), or "ossifying osteo-periostitis," and is rare in children. In acromegaly, clubbing may or may not be present; it has been recorded in infantile myxœdema, in intra-thoracic tumours, and is, of course, common in congenital heart disease. A few authors have connected it with neuritis or other diseases of the nervous system.

The clubbing is most often bilateral; in at least six cases, however, it has been seen in one hand only, and not in the other, these patients all suffering from aortic or subclavian aneurysm.

The matrix underlying Hippocratic finger-nails has been described either as œdematous or as congested and increased in quantity; so has the pulp at the finger-tips of clubbed fingers. In the latter condition it has often been seen (by the *x*-rays) that the size of the bone in the terminal phalanx is not increased. About 220 references to the literature are given.

A. J. Jex-Blake.

Rauchfuss (C). **Paravertebral dulness on the sound side in Pleural Effusion.** *Deutsch. Arch. f. klin. Med.*, 1906, 89, p. 186.

In 1897 Fr. von Koranyi described the occurrence of a pleuritic (=para-vertebral) triangle of dulness on the sound side in pleural effusions; this was in a Hungarian text-book. In March, 1902, Grocco published the physical sign of pleural exudation that goes by his name —the appearance of a para-vertebral area ("Grocco's triangle") of dulness behind on the opposite side of the thorax to the effusion.

Rauchfuss states that he had observed this sign himself for many years before 1903, when he gave a description of it at St. Petersburg; his observations were made on children, Grocco's upon adults, and he confirms Grocco's description of the sign in a general way. The dulness does not often appear unless the fluid reaches as high as the 8th dorsal vertebra; its base (in children) is from 2 to 8 cm. in length, according to the height to which the effusion reaches on the other side. The top of the triangle does not always reach up as high as the level of the fluid exudate on the opposite side; out of 77 cases recorded 1896—1906 by Rauchfuss, the apex of the triangle was 3 or 4 dorsal vertebræ the lower in half the cases. The duration of the exudate seems to be of importance in determining the height of the para-vertebral triangle. Rauchfuss gives details and photographs of cases in which the para-vertebral dulness was present, and also instances in which its discovery was of real diagnostic value.

A similar para-vertebral triangle on the healthy side may often be percussed out in cases of basal croupous pneumonia. Rauchfuss states that this is due, when it occurs, to the use of unduly heavy percussion. Dulness under these circumstances was first noted by Jürgensen (1874), who referred it to congestion and atelectasis of the non-pneumonic lung.

F. Hamburger (*Wiener klin. Wochenschr.*, 1906, No. 14) says that while the para-vertebral area on the unaffected side in pleural effusion is duller than the rest of that side, the para-vertebral area on the affected side is less dull, or clearer, than the rest of the affected side; the note is duller over the para-vertebral clearing or resonance (*i.e.*, on the affected side), than it is over the para-vertebral dulness on the sound side.

At first Rauchfuss attributed the para-vertebral dulness on the unaffected side to a shifting of the contents of the posterior mediastinum, as did von Koranyi. After further consideration and experiments he now concludes that Grocco's triangle is due to a shifting of the contents of the whole mediastinum, the contents of the posterior mediastinum being, of course, the most important. How far it is also influenced by the mere presence of a non-resonant mass of fluid in the affected pleural cavity, he is unable to say; he notes that it is only when heavier percussion is employed that the non-resonant mass of a lung in a state of pneumonic consolidation gives rise to a similar area of para-vertebral dulness on the unaffected side. This area of dulness does not disappear at once when the fluid is drawn off, but only after a day or two, because the contents of the posterior mediastinum take a day or two to return to their normal position in the thorax.

Rauchfuss lays stress on the employment of the lightest percussion possible, when the thorax of children is being examined; he prefers to judge almost wholly by the sense of touch, and by the sense of hearing but little, when he is working near the limits of perception and wishes to define with exactitude the limits of solid organs or pathological diminutions of resonance. He uses both direct and indirect tactile percussion in this way.

A. J. Jex-Blake.

Riggs (C. E.). **Myasthenia Gravis.** *Journ. Amer. Med. Assoc.*, December 15, 1906.

Three typical cases of myasthenia gravis are described by the author:

Case i. Male, aged 57. The first sympton to appear was diplopia, which was followed after a short interval by weakness of the whole motor system of rapid development. The only symptom on the sensory side was slight headache. On examination there was found bilateral ptosis and marked limitation of the ocular movements in all directions, with preserved pupillary reactions. The face was typical of the disease, being mask-like, and in smiling the only movement was slight elevation of the lips, the corners of the mouth not being moved out. Mastication was difficult owing to feebleness of the muscles concerned in the act, and he was unable to swallow solids. The soft palate and tongue were paretic, and speech indistinct and nasal. The muscles of the trunk and limbs were also feeble and very easily exhausted. The deep reflexes were rather brisk, and no sensory trouble was observed. As is so frequently seen in these cases, the symptoms were always more pronounced in the evening than in the morning of each day.

Case ii. Male, aged 35. He first noticed weakness and a tired feeling in his legs after an attack of influenza. These symptoms soon disappeared, and he remained well till three months later, when the weakness returned, with diplopia and difficulty in swallowing, especially late in the day. Examination revealed double ptosis, but no ophthalmoplegia, and an expressionless face and complete paralysis of the orbiculares palpebrarum. The tongue was weak, and slightly wasted, mastication was feeble and tired out easily, swallowing was difficult, and there was frequently regurgitation of fluids through the nose; the palate was paralysed, and articulation was scarcely intelligible. The muscles of the limbs were also very weak and tired out very easily on exertion; the myasthenic electrical reaction was occasionally obtained in some of them. Sensation was unaffected. The deep reflexes were sluggish and easily exhausted.

Case iii. Male, aged 45. The earliest symptoms he noticed were diplopia, ptosis and weakness of one arm, followed later by difficulty in articulation and feebleness of his legs. His face was more or less expressionless, with the characteristic nasal smile. There was marked ophthalmoplegia externa and great difficulty in swallowing, the movements of his tongue were weak and tired easily, and when he spoke for any time his articulation became indistinct and unintelligible. His limbs were weak and tired easily, and the myasthenic reaction was obtainable in their muscles. Sensation was unaffected and the reflexes were normal. The patient died a few months later, having had while under observation periods of temporary improvement and remission of the symptoms.

The author is inclined to believe that the disease is due to some toxine, which probably arises from an abnormal or altered internal secretion.

Gordon Holmes.

Mills (C. K.). **Unilateral Ascending Paralysis, and Unilateral Descending Paralysis.** *Journ. Amer. Med. Assoc.*, November 17, 1906.

In a previous paper the author described certain cases under the above titles from the similarity of their symptoms and course, without regard to the morbid anatomy that underlay them, or their pathogenesis. In the present communication he has collected together any similar cases he could find in the literature. Such a method of classification must be regarded as reactionary and conducive to confusion; it is the more to be deprecated as cases of all forms of nervous disease which merely conform to the type in that the affection is unilateral and that the paralysis progresses upwards or downwards, as the case may be, are under these headings. It is recognised that the following conditions may produce such cases: degeneration of the one pyramidal tract, disseminated sclerosis, unilateral amyotrophic lateral sclerosis, unilateral paralysis agitans, focal lesions either spinal or cerebral, cerebro-spinal syphilis, and hysteria. Wherein the practical utility of the author's suggestions lie is not evident. The classification of disease should be based, where it is possible, on morbid anatomy and causation, and not on symptomatology alone.

Gordon Holmes.

Lloyd (J. H.). **Faradization of the Motor Cortex of the Human Brain.** *Journ. Amer. Med. Assoc.*, December 15, 1906.

In 1888 the author had the opportunity of stimulating the cortex of the human brain through a small trephine hole, and came to the conclusion that the motor centres were located both before and behind the fissure of Rolando. He has been recently able to repeat the experiments under more favourable conditions and with more careful methods of experimentation, using only minimal unipolar excitation. The results he obtained entirely support the work of Grünbaum and Sherrington on the brains of the anthropoid apes, as excitable motor centres were found only in the pre-central (ascending frontal) gyrus.

Gordon Holmes.

Weir-Mitchell (S.). **Sudden Paralysis of the Pharynx.** *Journ. Amer. Med. Assoc.*, December 15, 1906.

The extraordinary case here reported is of a woman aged 27, who, while in good health, retired one night quite well, but woke up next morning with complete inability to swallow. For a few days there was considerable swelling and pain in the pharynx, palatal arches, and tonsils; her temperature was raised, and there was a good deal of general malaise. Three days later she coughed up large quantities of

blood and pus. At this period she complained of her left limbs being cold, and slight left ptosis and facial palsy developed.

The inability to swallow remained complete till the time her case was published, four years after the onset. When examined, a month after the attack, no local condition could be found to explain the palsy, but her knee-jerks were absent, and her right leg anæsthetic. Four years after the onset her general health was still good, although she received food only through a nasal tube during the interval; not even saliva was swallowed. The ptosis had diminished, but was still visible, but the functions of the other cranial nerves were unaffected. The one knee-jerk was absent, the other obtainable only with difficulty, and both ankle-jerks and plantar reflexes were lost. Sensibility to heat and cold was diminished on the whole of the right side of the body, while on the greater part of the right leg there was complete loss to all forms of sensation. Examination of the throat revealed some loss of all forms of sensation, chiefly to pain, in the pharynx and larynx, but there was no motor palsy of the tongue, pharynx or vocal cords; the reflex excitability of the palate and pharynx was, however, much diminished or quite lost. The electrical examination of these muscles was unsatisfactory. During a later examination of the patient a large firm growth was found projecting forwards from the anterior wall of the pharynx in the middle line; it was about an inch wide at the level of the arytenoid cartilages. The pharyngeal condition was otherwise unchanged.

The author was evidently in considerable doubt as to the nature of this case. He is inclined to believe it began with acute abscess formation between the vertebræ and the pharyngeal wall, and to ascribe the primary local palsy to a toxic cause. The ptosis and sensory disturbances are regarded as hysterical, the result of the mental shock caused by the sudden paralysis of deglutition. (He does not discuss the cause of loss of knee-jerk; neither this or unilateral facial palsy can be regarded as hysterical phenomena.)

GORDON HOLMES.

RECENT PAPERS ON CARDIAC AFFECTIONS.

By JOHN HAY.

HIRSCHFELDER (A. D.). **Study of Cardiac Diseases.** *Amer. Journ. of Med. Sci.*, 1906.

THIS paper was written to establish the value of multiple tracings as a routine method in the clinical study of heart diseases. The various phases of disturbed heart action are illustrated by tracings; these include records of the carotid, brachial and radial pulsations, the apex beat, the jugular pulse and the liver pulse. The method of recording the blood pressure and of giving at the same time the brachial pulse tracing is described, and certain forms of irregular heart action are differentiated by these means.

The author admits that there may be partial or complete heart block due to depression of the conducting power of the auriculo-ventricular bundle, but hesitates to accept the view that the fibres of this bundle have the power of originating stimuli and thus causing the auricules and ventricles to contract simultaneously. He classifies the irregularities of the heart under the following heads:—

1. Those arising from intermittent action of the spinal and medullary centres, especially through the vagus.

2. Irregularities arising at he mouth of the vena cava and in the auricle, due to disturbed contractility or over-distension of the auricle, with auricular extra systoles.

3. Irregularities due to premature contractions of the ventricles, arising in the ventricle from similar causes.

4. Irregularities due to failure of the auriculo-ventricular bundle to conduct, so that the ventricle does not respond to all the auricular beats, the so-called partial or complete heart-block.

5. A form of extreme tachycardia due to spontaneous initiation of the cardiac rhythm by the rhythmic contraction of the auriculo-ventricular bundle of His.

This last group is not accepted by the author.

JOHN HAY.

TRIBOULET (H.) et GOUGEROT (M.). **A case of permanent Slow Pulse.** *Arch. Gén. de Méd.*, 1906.

THE deails of a case of Stokes-Adams' disease and report of the post mortem examination are recorded:—

A woman, who from the age of 69 had exhibited an infrequent pulse, was admitted into hospital, when 79, suffering from syncopal attacks; the pulse was 36 to 38 per minute, and was permanently infrequent. While under observation the points of interest in her history were (1) that during an attack of pneumonia, when aged 81, the pulse frequency remained for two days about 80; (2) a year later later she was seized with dysenteric diarrhœa and bilious vomiting; pyrexia ensued and biliary catarrh; jaundice was marked, and the motions were pale. After lingering for some time she died. Associated with the jaundice and pyrexia there was again doubling of the pulse frequency. The pulse-rate remained about 80 until her death. The autopsy revealed some enlargement of the heart and fatty changes in the myocardium. No valvular lesion was found, no sclerosis and the coronaries were normal. The vertebral arteries were thickened, but there was no diminution in their calibre. The inferior portion of the basilar trunk presented an atheromatous patch, diminishing the calibre by about one-fifth. Histological examination showed nothing very characteristic. There were small capillary hæmorrhages about the floor of the 4th ventricle, and at one or two points there was some thrombosis. The findings were those of a toxic infection in which

vascular and peri-vascular lesions predominated. Nothing was found to account for the permanent bradycardia.

It is a matter for regret that there is no report as to the condition of the auriculo-ventricular bundle, for a degenerative lesion in that portion of the heart is the most likely explanation of the clinical history.

JOHN HAY.

KEITH (A.) and MILLER (C.). **Description of a Heart showing infiltration of the Auriculo-ventricular Bundle.** *Lancet*, November 24, 1906.

Two functions have been noted as especially characteristic of the auriculo-ventricular bundle—(1) that of conducting the stimulus from the auricles to the ventricles; (2) that it has the power under certain abnormal conditions of originating the stimulus for contraction. The first is now generally accepted, the second is still under dispute. This paper is a valuable confirmation of the second view, namely, that the auriculo-ventricular bundle has the power of originating stimuli.

In the *Lancet* of July 28th, 1906, Dr. Chapman recorded the case of a man who for twelve years before his death had a pulse of 42 beats per minute. There was great dilatation of the veins of the right side of the abdominal wall—right leg, and there was one large vein in the right axilla. He complained of occasional palpitation on exertion and shooting pain in the head. During the attacks of palpitation he would sometimes become suddenly faint, fall down and remain unconscious for a few seconds. He had suffered from syphilis when 28 years of age. He died aged 56 from peritonitis caused by perforation of the appendix. At the autopsy fibrous induration was found at the base and in the root of the right lung. The inferior vena cava at its entrance to the right auricle was nearly double its usual size, while the superior vena cava was completely obliterated, only a small scar marking the site which it had occupied. The heart rhythm could not have commenced at the coronary sinus or at the opening of the superior vena cava, for both were involved in and formed part of a cicatricial mass. Serial sections were cut of that portion of the heart where the auriculo-ventricular bundle is found. The first 15 millimetres of the main bundle, the whole of the network in which the bundle begins and all the auricular musculature in the vicinity of the network were reduced to dense fibrous tissue. The rest of the bundle and its right and left septal divisions were healthy. It is probable that a sclerosing gumma had destroyed the muscular connection between auricles and ventricles thirteen years before death, yet the complete section of the bundle had not resulted in any visible atrophy beyond the point of destruction. As the authors say, "were the peculiar system so well described by Tawara only a conducting pathway for the auricular stimuli into the ventricle one would expect degeneration in the system of fibres beyond the point of section, for it may be taken as an axiom in biology that

abrogation of function is invariably followed by atrophy. This case lends support to those who regard the auriculo-ventricular system of fibres as concerned not only in conducting but also in originating the impulse which leads to the contraction of the ventricular musculature."

JOHN HAY.

HAY (J.). **Paroxysmal Tachycardia.** *Edin. Med. Journ*, January, 1907.

THREE cases are described, and the character of the heart's activity during the paroxysm is discussed, the analysis of the manner of the heart's contraction being aided by numerous tracings of the jugular and radial pulses:—

CASE I. Youth, æt. 19. During two years he has suffered from paroxysms of tachycardia, 16 in number. On six occasions physical strain was the exciting factor. The paroxysms lasted from some hours to as many as eight days. The onset was sudden, and sometimes complicated with vomiting. During the attack the pulse-rate varied from 160 to 300. The heart's action was sometimes alternating, and the pulse on occasion was paradoxical. The heart always acted with perfect regularity as to time. Shortly after the onset of each paroxysm the heart became dilated, but recovered its normal size on the cessation of the tachycardia.

CASE II. A somewhat delicate child of 6. He was under observation during one paroxysm, which lasted from four to five weeks. The pulse frequency varied from 180 to 230 per minute. The boy was pale and well-nourished. He ate and slept well, and would not admit to any unusual sensations. The area of cardiac response was limited and the heart was dilated. Some months after the cessation of the attack the heart was normal in size. The termination of the attack was gradual, and the tracings taken during the period of cardiac arrhythmia afforded most valuable information.

CASE III. Man, æt. 42. Suffering from mitral stenosis and slight mitral regurgitation. His pulse was as a rule 40 to 60 per minute, irregular in force and frequency. Slight stress or excitement so affected the heart that it suddenly burst into a frequency of 160 beats per minute. During the attacks his sensations were simply those of a fluttering and trembling over the præcordium. He experienced no pain and only slight palpitation.

The tracings published in this paper strongly support the view that an abnormal cardiac contraction other than simple increased frequency is a distinct and essential feature of the paroxysm. Nervous influences are an important etiological factor, and act by so altering the condition of the heart muscle, and more particularly the fibres of the auriculo-ventricular bundle, that they are rendered more excitable and much more capable of stimulus production. The determining factor of the paroxysm is some cause which affects these fibres and initiates the

abnormal cardiac action; physical stress or strain is the most usual exciting factor, and such would be more likely to affect the cardiac musculature than any portion of the nervous system.

Treatment. A careful consideration of this division of the subject compels the admission that paroxysms tend to recur, and when in existence, to follow their course towards recovery independent of treatment. The value of mechanical methods, of breathing exercises, of drugs, including digitalis, the bromides, morphia and the vaso-dilators is discussed, and the conclusion arrived at is that treatment is largely empirical. One fact is suggestive, namely, that in those instances in which the paroxysm has been cut short the cause has been of such a nature as to alter the intra-cardial pressure—to remove strain, or, indirectly, to affect the heart, as by pressing on the vagus. The heart has then suddenly recovered itself, stimuli have ceased to be served up from the auriculo-ventricular bundle, and the auricle has again dominated the rhythm.

AUTHOR'S ABSTRACT.

SIMPSON (J. W.). **The Thyroid Gland in relation to Marasmus.** *The Scottish Med. and Surg. Journ.*, December, 1906.

IN the thyroid gland of a child the connective-tissue is more strongly developed and the follicles are more irregular in size and shape, but the difference from the gland of an adult are not at all marked. Colloid material may be found in the fœtus at four months, but is usually only small in amount in premature children or in the newly-born. This colloid material containing iodine is very important physiologically, and researches show that the physiological activity of the thyroglobulin depends on its containing iodine in the molecule. The writer has collected 80 different thyroid glands from children dying of various diseases, and the results of the examination of these glands are given. The glands of those dying from marasmus showed the most striking results, which were—(1) a large proportion of the vesicles patent, but devoid of colloid material; (2) marked increase of fibrous tissue frequently intra-vesicular; and (3) marked cell proliferation in a number of the vesicles. From these results and from further investigations the writer concludes that an abnormal and diseased state of the gland may be the chief, or one of the chief, factors in the causation of marasmus. Taking mal-assimilation as the cause of marasmus, and arguing that, as sclerosis of the thyroid has been found in the offspring of the tuberculous, the syphilitic and the alcoholic, unhealthy parentage probably produces degenerate changes in the thyroid, the writer suggests that the thyroid gland plays an important part in the assimilation of food. Thyroglobulin is excreted in human milk, but not in cow's milk, a fact which may explain the failure of cow's milk in some cases, and also account for the superiority of mixed over artificial feeding. The results of treating marasmic children with thyroid extract are surprisingly good. Six cases, which had been under treatment in the wards

for some time with no improvement were put on thyroid extract without any other alteration in diet or treatment being made, and in every case there was a marked improvement. One case died of intercurrent broncho-pneumonia, but all the others improved steadily and continuously, and lost ground if for any reason the thyroid had to be discontinued. Also all the cases treated as out-patients showed marked improvement.

C. P. Lapage.

Brown (S.). **The early diagnosis of Insular Sclerosis.** *Amer. Journ. Med. Sci.*, 1906, p. 891.

The author insists that the so-called typical symptoms of disseminated sclerosis—intention tremor, nystagmus, optic atrophy and scanning speech—should be relegated to their proper position as symptoms of the disease only in its advanced stages; this combination of symptomatic signs is rarely present in the earlier stages of the disease when its recognition is most important. MacIntosh's table showing the relative frequency of the first symptom of the disease, as noted by the patient, in a series of 80 cases is printed by the author. In 45 of these 80 cases motor paresis of one or more limbs was the first symptom, sensory symptoms generally in the form of paræsthesiæ in 29, tremor or ataxia of the limbs in 20, and various other symptoms, as apoplectiform attacks, ocular or visual troubles, vertigo or sphincter affection in several others.

Sanger Brown publishes four of his own cases to illustrate the protean nature of the disease:—

Case i. Male, aged 35. At 23 he began to suffer from attacks of vertigo and pain around the eyes. From six years later he frequently observed diplopia and some blurring of vision. The vertigo was often so severe as to prevent him from walking, but there was in addition constant uncertainty of gait, and during the three years before he came under observation one leg and an arm were often numb. There had been also some difficulty in starting micturition, and vision had deteriorated considerably. On examination sensation was found impaired on the left limbs, gait was ataxic and the tendon reflexes were increased. There was almost complete central scotoma in one eye, but the fundi are reported as having been normal.

Case ii. A man of 42 gave a history of slowly progressive ataxia and weakness of his legs for six months; then numbness and ataxia of his hands with tonic spasm of the interossei; afterwards diplopia for several weeks, paræsthesia of the lower extremities; a girdle sensation around the abdomen, and sphincter affection in the form of constipation and difficulty in starting micturition. On examination his gait was found spastic and ataxic, but the movements of the upper extremities were well executed; there was some sensory loss, chiefly to pain in the

arms and feet; the deep reflexes were increased and the abdominal absent. There was no ocular or visual trouble, or disturbance of articulation.

Case III. A female, aged 24. The illness began two years previously with a "sprained feeling" in her ankles, which persisted for six months. Later she had diplopia, intention tremor of her hands, paresis and paræsthesia of her legs, and incontinence of fæces and retention of urine. The movements of her arms were found on examination irregular and ataxic, but their strength appears to have been fair; sensation was perceptibly diminished on her legs, and the deep reflexes were exaggerated. Her articulation was slow and high-pitched, and the sphincter trouble though diminished was still considerable. The ocular movements, vision and the optic discs were normal.

Case IV. A male, aged 23 years, had diplopia for several months at the age of 10 years. He then remained free from symptoms till the age of 18, when he noticed weakness and tremor of his legs and transient amblyopia, and some time later hemiparæsthesia and anæsthesia and indistinct articulation. On examination there was found intention tremor of the one hand and considerable ataxia of the homolateral leg; the deep reflexes were exaggerated, but there was no nystagmus or visual trouble.

The clinical description of these cases is very incomplete, in fact, no mention is made of the most important and constant physical sign obtained in disseminated sclerosis, viz., the extensor type of plantar reflexes. The author, however, emphasises the intermittent course of the disease in many cases, its slow and steady advance in others, and the fact that its earliest symptoms may be identical with those of hysteria.

Gordon Holmes.

Rolleston (J. D.). **Lobar Pneumonia as a complication of Diphtheria.** *Brit. Journ. Child. Dis.*, December, 1906.

The author gives a survey of the literature, and records seven personal cases of this rare complication that occurred among 1,000 cases of diphtheria under his care at the Grove Hospital, London. He thinks that this complication is not a mere coincidence, for it shows a predilection for children, and occurs at an early stage of diphtheria. Though 266 of the 1,000 cases were over seven years, none of the cases of lobar pneumonia were above that age. With one exception, which took place in the ninth week, all the cases arose within the first ten days of the disease. Lobar pneumonia occurring in diphtheria differs from the more frequent complication of broncho-pneumonia in the physical signs, being much more obvious than the symptoms, in the absence of a widespread capillary bronchitis, and in its being a much more benign affection. All the cases of lobar pneumonia recovered, whereas 12 out of 15 cases of broncho-pneumonia among the 1,000 cases died. Unlike broncho-pneumonia, too, lobar pneumonia is not the special appanage

of laryngeal diphtheria. Only three were cases of laryngeal diphtheria, two requiring tracheotomy; three were of a severe faucial type, and one was a mild faucial case. On the other hand, 9 of the 15 cases of broncho-pneumonia were laryngeal cases, 7 of which were tracheotomised. Finally, the lobar pneumonia complicating diphtheria resembles the primary lobar pneumonia of children in being atypical in the following respects: absence of expectoration and of marked respiratory trouble in an occasionally remittent or even intermittent pyrexia, in the frequent occurrence of lysis, in its relative benignity, and absence of any sequelæ except empyema.

AUTHOR'S ABSTRACT.

MAGNUS (V.) **Herpes Zoster with changes in the Spinal Cord.**
Norsk Mag. f. Laegevidensk., December, 1906.

THE author has already described (*ibidem* 1902 and 1903) four cases of herpes zoster of the arms which was followed by motor disturbances, and he has since seen three more. He now gives details of a case in which herpes zoster appeared about three weeks before death in a patient who died of glioma of the right lenticular and caudate nuclei, at the age of 41. The eruption lay between the 3rd and 5th left costal cartilages in front, and the 4th and 7th dorsal spines behind, going completely round the left side of the body at the top of the axilla, and just passing on to the right hand side of the middle line before or behind.

Magnus fixed, stained, and examined 20 of the spinal ganglia on the posterior nerve roots; 19 were normal. But the 3rd left ganglion was redder to the naked eye than the others, and under the microscope numerous little aggregations of small round cells were seen; the vessels were dilated, round cells and the remains of hæmorrhages and pale shrunken ganglion-cells were to be seen in their vicinity. The round-celled infiltration was mainly at the periphery of this ganglion. No bacteria could be found in it.

Examination of numerous segments of the cord showed that the tissues around the vessels were all infiltrated with small round cells; this infiltration was most marked in the 2nd dorsal segment, diminishing in intensity up to the 2nd cervical and down to the 6th dorsal segment. This infiltration varied in intensity in the different parts of the various segments of the cord. In the 2nd dorsal segment the left anterior horn was more congested than the right; the left sulco-commissural and the central artery and the branch going to Clarke's column were much dilated; the left anterior horn was diffusely infiltrated with round cells, and its capillaries were much dilated; while the motor cells had lost their polyhedral form, their nuclei stained ill, and their Nissl's granules were in a condition of granular degeneration. The 3rd dorsal segment exhibited similar but less marked changes. The pia mater on the left side showed some evidences of inflammation. Comparatively few alterations were found in any part of the right hand side of the cord.

Magnus also found diplococci in and outside the dilated vessels on the left side of the cord, not retaining the stain by Gram's method; no cultures had been taken from the cord, however.

Magnus is of the opinion that the inflammatory processes in both spinal cord and posterior nerve-root ganglia were due to a single cause —invasion by the diplococci. Two plates representing the changes seen are given.

A. J. Jex-Blake.

Lundgren (H.). **An epidemic of acute Anterior Poliomyelitis.** *Hygiea*, November, 1906.

Lundgren describes an epidemic of acute infantile paralysis that occurred during the summer and autumn of 1905 in the neighbourhood of Växjö (or Vexio), in the southernmost part of Sweden. In all, 403 cases were seen; of these 147 were in the Växjö district, 218 in the Tingsaas district. Six occurred in April, 6 in May, 3 in June, 19 in July, 193 in August, 111 in September, 40 in October, 15 in November, and 4 in December. Further details of the 147 cases in the Växjö district are given: In May 6 cases occurred; in June, 3; in July, 11; in August, 86; in September, 24; in October, 9; in November, 5; and in December, 2.

Ages.	No. of Cases.	Fatal Cases.	Cases left with Paralyses.
1— 1	2	0	0
1— 5	43	4=11%	8=19%
6—10	43	7=17%	10=23%
11—15	23	2= 9%	8=35%
16—22	9	2=22%	6=67%
32—54	5	0	3=60%
Totals	125	15=12%	35=28%

The youngest patient was 6½ months old. Lundgren is unable to offer any explanation for the ocurrence of the epidemic, but notes that the rainfall was unusually heavy in the Växjö district during August, and that in 1905 there was much more thunder than usual throughout Sweden. At one time he thought that the disease was spread by some source of infection in the houses infected; he now believes that the spread often occurs directly from one person to another. Thus 8 cases occurred suddenly in the school at Kaarestad, 2 dying and 1 recovering with paralysis of the legs. In two families 5 children, in two more 4, were affected in each. No large epidemic of any other infectious disease occurred at he same time. He does not think that the consumption of fallen fruit has anything to do with the production of the disease. Obductions made on several cases dying in 2—4 days showed that the cerebro-spinal fluid was increased in amount and turbid, and that the anterior horns and also other parts of the spinal cord showed inflamma-

tory changes. No bacteriological examinations and no lumbar punctures seem to have been made.

Lundgren says that the incubation period in several cases was 8—10 days. Then comes a prodromal stage lasting 1—3 days, with headache, nausea, often vomiting, stiff-neck, tenderness over a part or the whole of the spinal column together with stiffness or even opisthotonus, mental dulness, often high fever, constipation as a rule, but sometimes diarrhœa; small children may become dull and sleepy, and may have convulsive spasms of groups of muscles or of limbs or of the whole body that threaten to cast them out of bed or off the mother's knees. Early in the disease the limbs may feel weak, and the gait may be somewhat spastic. In quite a number of cases the disorder stops here, and the patient recovers during the next few days, complaining only of feeling tired or weak, or of walking as if he was drunk, or of inability to pick up an object from the floor because the back is stiff and inflexible.

But in most cases, after 2—4 days the initial symptoms would return, and in a few hours evidence of paralysis would appear. This would increase in extent and intensity during the course of a few hours, and would be associated with a general disability of the patient to move himself at all. In one case the eyes were affected, in one case the hearing; the power of speech was not infrequently lost for a time. In the fatal cases the gradual progress of the paralysis up the body might be noted, either by patient or doctor; death occurring even within 48 hours from the first appearance of the paralysis. In certain patients extensive paralyses were observed, which in a few days vanished again. Lundgren suggests that in these cases a considerable pressure from exudation in the spinal canal underlay the signs exhibited. Pareses were left in 28 per cent. of the cases, as has been already mentioned; the joints were never involved.

Short detailed accounts of 51 cases are given. Lundgren thinks that only acute myelitis or multiple ascending neuritis could give trouble in the diagnosis, but disturbances of sensation are observed in both these disorders. The general mortality is 10 per cent., and paralyses are left in a quarter of the cases. In the treatment, the disease is infectious, and the patients should be isolated, and they and their belongings should be disinfected; all water for drinking and cooking must be boiled. As soon as the disease is suspected, the patient should be put to bed and given a powerful purgative; cupping and hot or cold applications to the spine should be employed. Tonics, massage, and electricity are indicated later.

A. J. Jex-Blake.

Prince (M). **Hysteria from the point of view of dissociated personality.** *Bost. Med. and Surg. Journ.*, October 4, and 11, 1906.

The paper is based upon a study of twenty published cases of dissociated or multiple personality, and contains a tabulated analysis of their chief features. Whilst it is well recognised that multiple personality is a

phase of hysteria, in the author's opinion it is equally true that the hysterical is a disintegrated personality, and, therefore, as contrasted with the previous normal condition, is pathologically a phase of multiple personality. Amnesia is not an essential part of secondary personalities, and the patient may remember in either stage of her condition all the characteristics of that which preceded it, or again may be amnesic in one personality and not in another. Alternation between the normal and hysterical personality is of common occurrence; and when, through suggestion or other treatment, the originally hysterical patient becomes healthy, the author would consider the latter the normal condition. The paper contains a clinical study of many of the tabulated cases.

J. W. Russell.

Rhein (J. H. W.). **A pathological study of seven cases of Paralysis without gross anatomic change in relation to the causes of Uremic Hemiplegia.** *Journ. Amer. Med. Assoc.*, November 24, 1906.

The author restricts the diagnosis of uræmic paralysis to those cases in which, during an attack of uræmia, develop transient palsy, or a palsy which may persist to the end if the issue is fatal. In arriving at the diagnosis, search should be made for signs of renal intoxication, such as general or pulmonary œdema; premonitory symptoms, such as vertigo or gastric disturbances; the presence of albumen and casts in the urine, etc. Different authorities have held that uræmic paralysis is due to cerebral œdema, auto-intoxication or arterio-sclerosis, and it is probable that the anatomical cause is not the same in all cases. Chromatolytic changes, suggestive of auto-intoxication, have occasionally been found in the cortical cells and in those of the medullary nuclei. Arterio-sclerosis may act by producing a condition of malnutrition of the cortical cells, which may become temporarily exhausted; or, according to Raymond, it may set up a cerebral œdema, which may either re-awaken an old lesion, or, in conjunction with the anæmia always present in kidney disease, may produce sufficient embarrassment of the circulation to bring about an apoplectic attack. Of the seven cases reported by the author, in six the findings warranted a diagnosis of cerebral syphilis, whilst in the seventh the lesion, although not entirely characteristic of syphilis, pointed to a similar conclusion. In this case there was much arterial change, and the peri-vascular spaces of the para-central cortex were markedly distended. In two other cases microscopic areas of softening were found in the cortex; and the authors holds that such areas, if numerous, would be capable of causing alterations of the functions of the cortex. He believes that herein lies the explanation of a certain number of cases of uræmic hemiplegia.

J. W. Russell.

FISHER (T.). **Some complications of Tuberculous Infection in the Lymphatic Glands in Children.** *Clin. Journ.*, November 28, 1906.

AFTER describing the effects and symptoms produced by tuberculosis of the mesenteric glands, the writer states that although tuberculosis of the mesenteric glands may be a source of serious complications, tuberculous disease of the glands of the thorax is a greater source of danger and of much more frequent occurrence. Tuberculous disease of the lungs is more acute in children, and nearly always begin in comparatively chronic disease of the bronchial glands. From this reason it is almost as frequent in the lower as in the upper lobes. A rheumatic pericarditis, measles followed by broncho-pneumonia, an attack of diphtheria or some other disease may act on these glands and light up a general tuberculous infection. These glands may by pressure cause a saccular dilatation of the bronchial tubes, as shown by photographs, but this is of comparatively rare occurrence. Suppuration will accentuate the symptoms, and the caseous material may be discharged into a bronchus. Post mortem, the œsophagus may show a depression where the glands have pressed on it. Two cases of fatal hæmorrhage from softening of a large artery by contiguous tuberculous foci are described.

C. P. LAPAGE.

RAYMOND. **A complicated case of Tumour of the Brain, with mental symptoms accentuated and primitive.** *Arch. Gén de. Méd.*, 1906.

THE first symptoms noticed in this case were a failure of coherence in ideas; the patient passed disjointedly from one subject to another, and would reply irrationally to questions. On one occasion, whilst playing at cards, he lost himself, and played entirely at random. Then followed loss of memory and a tendency to repeat himself in conversation or in writing. At the same time, he became irritable, and eventually careless and indifferent to his surroundings. These symptoms gradually developed during the latter part of 1905 and the first quarter of 1906. In April, 1906, occipital headache first appeared with occasional vomiting, and it was noticed that he dragged the left leg; and this condition increased to a well-marked left hemiplegia, with inco-ordination and slight tremor. The pupils were contracted and did not react to light or accommodation. By the end of May there was double optic neuritis, and examination showed the presence of left temporal hemianopia. There was also slight left facial paralysis, and the patient tended to fall towards the left side. The left knee-jerk and elbow-jerk were exaggerated, but there was no ankle clonus or extensor plantar reflex. Sensation was diminished on the left side to touch, pain and temperature. Professor Raymond is of opinion that the case was one of

cerebral tumour, occupying the middle and posterior part of the corpus callosum, involving, secondarily, the right optic thalamus and compressing the optic tract. J. W. Russell.

Hemmeter (J. C.). **Bismuth and the x-rays in the detection of Gastric Ulcer.** *Arch. f. Verd.-Krank.*, 1906. Bd. xii., p. 357

As the result of experimental work on rabbits and cats the writer recommends that in suspected gastric ulcer a large teaspoonful of bismuth subnitrate in a cup of water be given on an empty stomach, and that the patient then lie for half an hour with that surface of the stomach downwards where the ulcer probably is situated. The abdomen is then examined with the screen, and if necessary with a photographic plate. A diffuse shadow should be seen for the stomach, and a darker smaller patch if an ulcer is present. The bismuth over the stomach should disappear in an hour, that over the ulcer should, if no food be taken, be visible for 24—36 hours. Examinations cannot be made on successive days owing to the shadow caused by bismuth in the colon. In view of the frequency of ulcer on the hinder surface and at the pylorus, it is best for the patient first to lies on the back and then if no shadow is given to lie on the right side. The liver does not cause as much trouble as might be expected. Carcinomatous ulcers may be examined in the same way. E. B. Leech.

Zweig (W.). **Physiological value of Mucus.** *Arch. f. Verd.-Krank.*, 1906. Vol. xii., p. 364.

Experiments were carried out on the mucous membrane of stomachs removed from recently killed animals, to show the value of the mucus found in health spread in an even layer over the surface. The stomach for each experiment was divided into two similar portions; these were pinned side by side on to a cork block, and the mucus from the surface of one portion only was carefully removed by means of a soft swab passed over it. Preparations made in this way were exposed to various chemical and thermal tests; they were dipped into water at various known temperatures from 90° to 100°C. for a definite number of seconds, or were exposed to known strengths of caustic potash, acetic acid and sulphuric acid. Sections were then cut and stained. Every care was taken that the two portions on the one block were treated in an exactly similar method. The unprotected membrane was in all cases found to have suffered much more than the protected. The cells of the former were often completely necrotic, while those of the latter were in fair condition. Also in the one case the wall was shrivelled up and often reduced to half the thickness of the other. These experiments show the value of mucus in protecting the stomach wall against the hot and caustic fluids so frequently brought into contact with it.

E. B. Leech.

Einhorn (M.). **Banti's Disease.** *Arch. f. Verd.-Krank.*, 1906. Vol. xii. p. 373.

Banti in 1894 described a disease of which the main symptoms are splenomegaly, anæmia, cirrhosis of the liver, and ascites. He considered the disease to be one essentially of the spleen, the anæmia being secondary. It can be divided to three stages—first comes the preascitic or anæmic stage, where swelling of the spleen is followed by anæmia, weakness and dyspnœa often with epistaxis and temporary œdema of the feet; this stage is amenable to treatment, and usually lasts three or four years. Then follows for a few months an intermediate stage, in which the urine diminishes and digestive troubles occur, such as from diarrhœa and hæmorrhoids. Ascites, gradually increasing, very persistent, and re-accumulating after tapping is the characteristic symptom of the third stage. Death follows often in six to eight months from exhaustion. The liver, which is usually somewhat enlarged, may diminish again. The blood is but little changed.

Other writers have described somewhat similar cases to this. Many, however, lay stress on recurrent hæmorrhage from the stomach and intestine as one of the most essential features of the disease. There is much difference of opinion as to the amount of liver enlargement. Einhorn himself describes 18 somewhat similar cases, and divides these into three groups, which probably constitute different diseases:—

1. Seven cases agreeing very closely with Banti's original description in that they had splenomegaly, anæmia, liver cirrhoisis and ascites, the last recurring rapidly after tapping. Of these cases four are dead, two are not traced and one is now seriously ill. The prognosis of this form is therefore very bad.

2. Three cases with the above symptoms, with profuse hæmorrhage from the stomach and intestine in addition. The disease runs much the same course as in the first class. All three cases are now dead.

3. Eight cases where the spleen is not enlarged to such an extent as in the other classes while the liver is still more enlarged. Anæmia and often severe dyspeptic symptoms occur. In fact the disease seems to be digestive in origin. Recovery is frequent, and in this respect this disease differs from the other classes. Possibly it is identical with hypertrophic cirrhosis. Of eight cases, six were improved or cured, one died after an improvement lasting three years, one cannot be traced.

Banti suggested extirpation of the spleen for this disease, and this has been carried out several times with success. Medical treatment consists of potassium iodide, iron and arsenic.

E. B. Leech.

Findlay (L.). **Case of Mixed Cell Leukæmia.** *Glas. Med. Journ.*, 1906, p. 264.

The patient was a boy, eleven years old, and presented the symptoms usually met with in acute leukæmia. There was no apparent enlargement of liver and spleen, but there was slight increase in the size of

the lymphatic glands. A petechial rash and a sore throat were the most noteworthy events in an illness that lasted about seven weeks. Examination of the blood showed 40,000 white cells, of which 60·6 per cent. were myelocytes, 24·0 per cent. small lymphocytes and 11·7 per cent. large lymphocytes in a film stained by Ehrlich's triple fluid. The increased number of large lymphocytes may be neglected since the author is doubtless right in believing them to be immature cells derived from the bone marrow. The interest of the case rests on the increase noted in the number of small lymphocytes, the absolute numbers being 9,960 instead of 2,500 per cm.m. The pathological findings support, so the author thinks, the diagnosis of mixed-celled leukæmia based on the blood examination. Well-marked leucocytic hyperplasia of the bone marrow gave an unequivocal picture of myelogenous leukæmia. Examination of a mesenteric gland showed marked lymphocytic hypertrophy, such as is seen in lymphatic leukæmia. The author is of opinion that these findings clearly indicated a hyperplasia of both the myeloid and adenoid tissue, and he suggests that the hyperplasia of the bone marrow was the primary event, and that hypertrophy of the adenoid tissue was secondary due to infiltration of the lymphatic glands with myelocytes. Records of true mixed celled leukæmias are so rare and so frequently fail to stand the test of close investigation that one hesitates to accept this one, but it must be admitted that the author has made out a strong case.

E. N. Cunliffe.

Buttino (D.) and Cattaneo (F.). **Diplococcal Inflammation of the Thyroid Gland.** *Riv. crit. di. clin. med.*, 1906, No. 40.

The authors remark that not more than 10 cases have been recorded in which inflammation of the thyroid gland has been due to Fränkel's diplococcus. The patient, a woman of 47, had had a goitre since she was 20. On March 4th she had a rigor, and signs of a right basal pneumonia developed; the high temperature fell on March 13th, soon after which the pulmonary signs cleared up completely. From the 13th, however, the temperature rose again, and remittent fever began. On March 20th and 23rd the blood was examined for the diplococcus, but without success. On the 29th a tender swelling appeared in the left lobe of the thyroid; it grew slowly until April 15th, when it was the size of a hen's egg. It was then opened and a quantity of thick creamy inodorous pus escaped. This pus gave pure cultures of Fraenkel's diplococcus. The patient then made a good recovery.

A. J. Jex-Blake.

Klemperer (L.). **Spontaneous rupture of an enlarged Spleen.** *Hygiea*, October, 1906.

No case of spontaneous rupture of a normal spleen has been recorded. Klemperer gives details of the case of a man who had a mild quotidian fever (presumably malarial') at 39, and at 51 was found to have

diabetes. Soon afterwards he was free from glycosuria, but was anæmic, rather thin, a little jaundiced, and his liver was enlarged—probably cirrhotic; his spleen was very large, tender and soft. He had no fever, but his pulse was rapid—104. His water contained no sugar, a little albumen, and an excess of bile pigment. He was under Klemperer's observation for four days before he died; during this time he complained of abdominal pains after food, and spent most of his time in bed; his motions were normal. At 6 p.m. on the fourth day he took a bath, which brightened him up; he took some soup, but complained of abdominal distension. At 9 p.m. his pulse was 112, of good tension; his abdomen was full and tender. Local applications were made and morphia was given, and the patient went to sleep. At 2 a.m. he had a call to stool, but fainted in his room on the way. Soon afterwards Klemperer found him pulseless, fully conscious, complaining of abdominal pains and tenderness—the latter mostly on the left side. Stimulants were injected, but the patient died in two hours.

At the obduction the heart was enlarged and soft, the lungs a little œdematous behind. A considerable amount of blood-stained fluid escaped from the abdomen, and blood-clots were found round the spleen. A crack four or five inches long was found in the spleen, which was eight times as large as the normal, and contained numerous hæmorrhages up to the size of an apple, while the crack led into a cavity the size of a fist. The liver was enlarged, soft, and myristicated, the gall-bladder empty. The pancreas was normal. In the retroperitoneal tissue about the portal fissure was a diffuse collection of thick pus in which the gall-bladder lay. In the lower ileum was an ulcer the size of a finger-nail, apparently in process of healing. The mesenteric glands were softish and enlarged; it was thought that the ulcer might have been a healing typhoid ulceration. No bacteriological examinations could be made.

Klemperer concludes that the patient had ambulatory typhoid fever; the suppuration about the liver caused thrombosis in the splenic vessels, and this gave rise to the changes seen in the spleen, which was brought into a condition in which it could rupture very easily.

A. J. Jex-Blake.

Nordman and Billet. **Pleurisies occurring in Typhoid Fever during defervescence and in convalescence.** *Arch. Gén. de Méd.*, 1906, p. 1537 *et seq.*

The object of this paper is to draw attention to the fact that pleural effusions occurring after the third week of typhoid fever are frequently tuberculous; such effusions often contain Eberth's bacillus, and give the agglutination reaction. A favourable prognosis which proves to be unsound, is often based on the two last-mentioned points, and often tubercle is only suspected when the condition shows no improvement after many weeks, and, perhaps, phthisical symptoms develope. In

doubtful cases some of the fluid should be inoculated into guinea-pigs, and one should never be satisfied with a single negative result; hospital patients should be kept under observation for some time after discharge.

FRANK E. TYLECOTE.

PATER (H.). **The action of a chloride free diet on the variations in weight which occur in the course of scarlet fever.** *La Presse Méd.*, May 19, 1906, p. 318 *et seq.*

GARNIER and Sabaréanu in 1904 made some observations on the variations which occur in the body weight in scarlet fever. Their patients were kept on an exclusively milk diet for the first fifteen or twenty days, and were then allowed a mixed diet. They showed that during the first few days of the fever the weight remained stationary or rose slightly, that it then fell rapidly at the same time as the temperature—that this period was succeeded by a period of stationary weight in the region of the minimum point reached. About the sixteenth day, when the milk was replaced by a mixed diet, the weight rose, at first rapidly and then more slowly until it reached or passed its original level. The present writers adopted the plan of allowing, as soon as the temperature had fallen to normal, the addition to the milk dietary of the following chloride free substances: saltless bread, milk and potato soups, macaroni, rice, fresh butter, etc. As a result of this diet the weight at once began to rise, and steadily continued to do so until its normal was reached or passed. The excretion of chlorides and of urea kept up, and convalescence was accelerated to a marked degree. A febrile albuminuria does not contra-indicate this diet, as traces of albumen were found to rapidly disappear under its use, while the patient is placed at an early period of the disease in a favourable condition for combating complications and secondary infections. The number of cases in which the method was tried by the authors was not sufficiently large to justify the unqualified acceptance of the above conclusions, but the régime is one well worthy of extended trial.

FRANK E. TYLECOTE.

Surgery.

Maitland (H. L.). **A radical method of extirpating malignant growths in the Neck secondary to Mouth Carcinoma.** *The Austra. Med. Gaz.*, October 20, 1906, p. 497.

The author points out that the lymphatic vessels do not appear to be liable to infection in these cases, and that the glandular area is, compared to that in other regions, easy to expose. The glands, liable to infection, he groups as follows:—(1) Parotid, 3 groups (subcutaneous, beneath the fascia and the deep glands), of which only the last are affected; (2) submaxillary; (3) submental; (4) deep ascending cervical chain, beneath the sterno-mastoid and above the clavicle; (5) external jugular chain. In his operation he aims at removing the connective-tissue of the neck and with it the glands, rather than performing a dissection of the glands themselves. This operation has been performed by him for the past five years so frequently as "to average one case a week," and freedom from recurrence in many cases leads him to hope that it will become the operation of the future. The incision is one from the point of the chin to the mastoid process, then along the anterior border of the sterno-mastoid, finally curving backwards along the clavicle; these flaps are turned up, and a clean dissection made of the areolar tissue and glands, beginning at the digastric triangle; the lower portion of the parotid is removed, and the sterno-mastoid divided in its centre, and after clearing away the deep group of glands and the sterno-mastoid the internal jugular vein is ligatured and removed. Excision of the sterno-mastoid appears to have no bad effects.

Lawrence Jones.

Körte (W.). **Operations for Perforated Gastric Ulcer.** *Arch. für klin. Chirurg.* Bd. 81, thiel. 1, p. 82.

In 1900 the author published ten of these cases, with only one recovery. As showing the improvement that has followed the practice of early operating, he now brings forward a further series of 19, with 13 recoveries. Of these 19, 14 were males, 5 females; 14 were between 20 and 40 years old, the youngest 17, the oldest 61. The middle period of life tends towards the happiest results. Twelve patients had had previous symptoms of gastric trouble, but only 2 had vomited blood. In no less than 4, gastro-enterostomy

had been performed at an earlier date for pyloric stenosis or active ulcer. In every case the symptoms were ushered in by sudden pain and collapse; in 6 there was vomiting.

The author lays stress on the marked improvement or reaction which often occurs after the collapse, and points out the danger of giving opium. The most important sign is localised rigidity, and after that tenderness on pressure; diminution of the liver dulness is by no means constant, and was only noted in 50 per cent.; still when present it is a sign of some value. Blood-counts are futile; marked leucocytosis would only occur if the patient is too far gone for operative measures. In making a diagnosis it may be difficult to say whether the peritonitis present is due to a perforated ulcer or to some other lesion, such as appendicitis; in the former case, at operation the pus would have a sour smell, in the latter it would be fæculent. Some errors must occur, and laparotomy must sometimes reveal nothing, but this should not discourage one from early operations, for in his series of cases all operated on within nine hours recovered, while 50 per cent. of those left until after that hour died. The deep initial collapse is to him no bar. In the actual operation there are four essentials—rapidity of technique, early finding of the ulcer, a safe suture, and thorough cleansing of the peritoneum. In 50 per cent. free gas was found in the abdomen; in all there were serous exudate and stomach contents, often mixed with bile. Difficulty in suturing may arise from the deep position of the perforation or the brittle condition of the edges; in the latter case the edges should be pared widely until healthy tissues are reached. Care must be taken to avoid any subsequent contraction of the pylorus, and sometimes for this reason a gastro-enterostomy may be required. He has had no cases in which suture was impossible.

LAWRENCE JONES.

BOLDT (H. J.). **The management of Laparotomy patients and their modified after-treatment.** *New York Med. Journ.*, January 26, 1907, p. 145.

BESIDES the ordinary routine of preparation, the patient is given, $2\frac{1}{2}$ hours and $1\frac{1}{2}$ hours before operation, an injection of scopolamine hydrochloride gr. $^1/_{180}$ with gr. $^1/_{12}$ of morphine sulphate; this is merely intended to diminish the amount necessary of ether or chloroform. The author is not wholly satisfied with this, for in two instances the patients have died on the table, an accident which he attributes in one case at any rate to this method. He is in favour of a long incision as leading to less bruising of the edges of the wound by retractors, etc., and in the case of an incision through the rectus, he closes it in four layers with catgut. In two cases recently tetanus proved fatal on the 18th and 12th days after operation, a calamity ascribed to the catgut, although subsequent examination of the catgut similar to that used at operation proved it sterile. Boldt uses an adhesive bandage, and encourages his

patient to get up in 24 hours, and has seen no ill-effects following such a procedure. The good effects are as follows:—There is less of nausea and vomiting, less distension; the bowels move naturally; there is less tendency to lung complications; food is taken more readily, and there is a more rapid general recovery of strength. In practice, embolism—which one would expect—does not occur.

LAWRENCE JONES.

PICQUÉ. **The early treatment of Abscesses in the Pelvic Rectal space by a V-shaped incision.** *Gazette des Hôpitaux*, January 22, 1907.

THE author lays stress on the need for early diagnosis and on the frequent occurrence of the disease among the insane. There is usually a projection outwards of the whole perinæal floor, not localised as in ischio-rectal abscess; this area is much indurated, and presents a point of exquisite tenderness on either side of the anus. The symptoms, such as tenesmus, have nothing very characteristic about them, but they may lead to a rectal examination by which may be detected induration high up and on either side of the rectum. He points out, with regard to the anatomy of the region, that whereas the inferior pelvo-rectal space is composed of two separated fossæ, the superior space is continuous all round the rectum. This superior space is between the peritoneum and the levatores ani, and is most extensive behind the rectum, less at the sides and almost non-existent in front. He alludes to the various sources of infection in this region. It is quite essential to have thorough drainage for the whole space, and for this he recommends a U-shaped incision on either side and behind the rectum, dividing each levator ani and freeing the rectum from its attachments behind. The lateral parts of the incision are made first separately, and thus each ischio-rectal fossa is explored; the incision is completed by a cross cut behind the anus.

LAWRENCE JONES.

CHEVRIER. **A new method for Jejunostomy.** *Gazette des Hôpitaux*, January 10, 1907, p. 39.

THE author gives a full historical account of the operation. A good jejunostomy should fulfil three conditions—(1) the formation of a good "intestinal mouth" by which to feed the patient; (2) the prevention of any regurgitation of duodenal or jejunal contents; (3) it should not create any obstacle to the normal circulation of the intestine.

Methods hitherto adopted are classified as they fulfil these requirements:—

1. Primitive methods.
   (*a*) Those which do not suture the mucosa to the skin, but form a fistula like an artificial anus; the whole operation being completed in one sitting, as by Surmay and D'Arce, or in two sittings, by Robertson, Bird, etc.
   (*b*) Those suturing mucosa to skin, as in the Montaz and Terrier operations.

2. Proceedings which ensure continence. By Eiselberg's method, following Witzel's gastrostomy, or by the valvular method of Kader, or by torsion, as in Guinard's operation. In all such, of which these three are but examples, a definite obstruction to the intestinal lumen is effected.

3. Proceedings which partly fulfil the other two conditions, and which do not lead to obstruction.
   (*a*) Division of the gut and implantation by the Y method of Maydl (this opening is not necessarily continent); improved methods make use of the rectus as a sphincter or use torsion.
   (*b*) Lateral anastomosis between the two limbs of a selected loop of jejunum, and at a second operation the formation of an opening at the summit of the loop.

The obstruction created by the operation may be at the free border of the intestine, owing to the longitudinal puckers made to secure a valve-like orifice or at the mesenteric by the formation of a spur. In order to obtain all the results desired the author proposes a new and elaborate method which is impossible of description without the aid of diagrams, but which may be briefly summed up as being transomental, suspending the intestine vertically so as to obliterate the spur, and using transverse sutures in the formation of the valvular orifice.

LAWRENCE JONES.

CAVAILLON and BARDIN. **Inflammatory Neoplasms of the Pelvic Colon.** *Gazette des Hôpitaux*, February 5, 1907, p. 171.

THERE are certain "tumours" of the alimentary canal supposed to be malignant which surprise the clinician by their spontaneous disappearance after exploratory operations or medical treatment. Such are those under consideration. The frequency of "tuberculomata" of the cæcum has been made widely known. Many cases of supposed syphilitic stricture of the rectum are probably of like origin. Even if no definite tubercles can be found the cause may still be tuberculous, as agreed by Berard and Patel.

The author has collected from various sources 26 examples of inflammatory "neoplasms" of the sigmoid, 2 of which he rejects, 4 were syphilitic, 7 tuberculous and 13 simple inflammatory thickening. All the last cases were taken for malignant, and the diagnosis not made until shown by exploratory incision, by their spontaneous disappearance

or by examination after death. They contrasted in their large extent with the localised stenoses of cancer; there was always much peritonitis, sometimes a little pus. The intestine above sometimes presents small ulcers. It seems almost impossible to make a correct diagnosis. The main site of the inflammatory change is around the crypts and in the submucous tissue. Tuberculosis is rare; it gives rise to three forms of disease—(1) tuberculous infiltration with ulceration; (2) hypertrophic tuberculosis—the commonest form; (3) inflammatory tuberculosis. In the simple form the change is mostly around the glands, in the syphilitic it is peri-arterial, in the tuberculous, submucous or diffuse. All these affections declare their presence in one of three ways—by acute obstruction, by suppuration in the left iliac fossa or by the presence of a tumour.

LAWRENCE JONES.

CUMSTON (G. C.). **Surgical aspects of Bronchiectasis.** *Dublin Journ. of Med. Scien.* October 7, p. 83.

BRONCHIECTASIS in children is not so rare as has been hitherto supposed; it is likely to follow the bronchitis of whooping cough or repeated attacks of pneumonia, and to be almost latent at first; dyspnœa and a rise of temperature after exertion are suspicious symptoms. The naked eye characters of the sputum are not so typical as generally thought; even the absence of Koch's bacillus and the presence of elastic fibres do not make the diagnosis certain. Much more important is the manner in which the sputum is expectorated; there are intervals when the child is quite free, and the copious discharge often has relation to some event, such as turning over in bed in the morning.

Quincke has applied the fact of the regular accumulation of secretion during the night to the treatment by postural methods. In children, owing to the position of the disease in the lower lobes, and its gradual development, physical signs may be entirely absent. The physical signs in the case of large cavities are alluded to at some length, and stress is laid on their changing characters. The *x*-rays are only of value in cases which present large cavities; in 21 such cases von Criegern obtained positive results in 20; they are of no value in the early tubular stages. The condition is much more common in the lower lobes, and is usually bilateral with a predilection for the left side.

Treatment by drugs and postural methods is often a failure. Operation by incision and drainage has not had the success that was hoped for it; it is dangerous from the possibility of infecting the pleura and allowing of a pneumo-thorax. The latter danger is hardly recognised by the author. D'Azincourt found that there were 10 deaths following 38 operations, and other statistics are quoted. Setting aside the high mortality, the word "cure" hardly conveys the ultimate condition of the patients, many of whom are discharged with a sinus or with remains of the bronchiectasis. Vierodt, improving on the teachings of

Quincke, decided to obtain immobilisation of the thoracic wall by resecting ribs, and thus allowing the lung tissue to retract and the cavities gradually to heal, assisting the process by strapping the chest and Quincke's position. Cumston reports two cases successfully treated by this method.

LAWRENCE JONES.

SHELDON (J. D.). **A further report on a case of Cirrhosis of the Stomach.** *Annals of Surg.*, 1906. Vol. xliv., p. 666.

THREE and a half years ago an exploratory operation was done upon a patient whose stomach was found to be very small, with markedly thickened and indurated fibrous walls and an atrophic mucosa. The case was regarded as a benign diffuse cirrhosis, and gastro-enterostomy was performed. The patient is now perfectly well, eats ordinarily without discomfort, works constantly on his farm, and his weight and strength are fully up to the normal standard. This result, in the writer's view, proves that the condition was benign, although it is certainly rare and difficult or impossible to distinguish, clinically, from a diffuse carcinoma.

LAROQUE (G. P.), **Augulation at the Sigmoid.** *Annals of Surg.*, 1906. Vol. xliv., p. 678.

A CASE is here described, the chief features of which were—(1) a history of recurrent attacks of violent abdominal pain, extending over a period of four years, accompanied by nausea, vomiting and moderate shock, and sometimes followed by the passage of blood; (2) obstinate, almost absolute, constipation; (3) intestinal distension; (4) hypertrophy of the colon; (5) on *rectal examination*, with the proctoscope, the mucous membrane about eight inches from the anus was excessively tender and evidently inflamed; an apparently sessile growth projected into the lumen of the canal just above the junction of rectum and sigmoid.

Cœliotomy was performed by Dr. MacGuire. The large intestine was found distended with gas and fæces; the rectum was empty. The sigmoid was attached by a very short meso-sigmoid, causing rather a sharp angulation. What had seemed to be a growth arising from the mucuous membrane, as seen through the proctoscope, proved to be an invaginated portion of mucous membrane of the sigmoid flexure through the portion constricted by its short mesenteric attachment, and producing the angulation. After dividing the short meso-sigmoid the fæces were easily manipulated into the rectum. Convalescence was uninterrupted, and on the third day a painless evacuation was secured. The patient is now entirely free from symptoms.

P. R. COOPER.

Sicord (E. R.). **Hernia into the Ileocolic Fossa.** *Annals of Surg.*, 1906. Vol. xliv., p. 683.

This seems to be a unique case of retro-peritoneal hernia, in which the cæcum, appendix, and about four inches each of the terminal ileum and ascending colon were herniated into the ileo-colic fossa, strangulation and obstruction being caused by the anterior vascular fold. Laparotomy being performed, the obstruction was relieved, and recovery finally ensued.

Krauss (W. C.). **Dislocation of Vertebræ in lower cervical region, followed by symptoms of complete severance of the Spinal Cord; Laminectomy; later partial restoration of function.** *Annals of Surg.*, 1906. Vol. xliv., p. 641.

This is an account of a case in which there were (1) an undoubted dislocation of the sixth cervical vertebra; (2) crushing of the cord, shown by its pinched and flattened condition as seen at the operation; and by the occurrence of (3) all the symptoms of a complete transverse lesion of the cord, which persisted until the laminectomy; (4) a remarkable recovery of function, although operation did not take place until fifteen days after injury. P. R. Cooper.

Grandon (L. R. G.) and Wilson (L. T.). **Fracture of Base of Skull, analysis of 530 cases, with particular reference to treatment and Prognosis.** *Annals of Surg.*, 1906. Vol. xliv., p. 823.

This analysis is based upon the records of 530 cases which occurred at the Boston City Hospital from 1864 to 1906. The number of recoveries was 299. Consciousness was lost in 232; of these 98 recovered. Hæmorrhage occurred in 395; of these 214 recovered. The bleeding was from *one ear* in 281, with 170 recoveries; from *both ears* in 47, with 16 recoveries; from the *mouth* in 44, with 17 recoveries; from the *nose* in 168, with 73 recoveries; sub-conjunctival in 53, with 32 recoveries.

The pupils were *equal* in 281, with 212 recoveries; unequal in 155, with 65 recoveries; *dilated* in 74, with 17 recoveries; *contracted* in 20, with 5 recoveries. The knee-jerks were *normal* in 221, with 204 recoveries; *absent* in 39, with 15 recoveries; *unequal* in 11, with 10 recoveries; *increased* in 29, with 8 recoveries; *decreased* in 30, with 8 recoveries.

Paralysis occurred in the *face* in 46, with 31 recoveries; in *one limb* in 13, with 3 recoveries; in *one side* in 41, with 5 recoveries; *general and spastic* in 14, with 1 recovery; *ptosis* without facial paralysis in 5, all recovered. Exophthalmos occurred in 14, with 6 recoveries. Stertor was present in 117, with 11 recoveries. Vomiting occurred in 78, with 98 (?) recoveries. Alcoholic intoxication co-existed in 170, with 106 recoveries. Operation was performed in 59 cases, with 28 recoveries. The average stay in hospital of the fatal cases was 2½ days, of the recoveries 16 days.

In conclusion, the writers strongly urge that in all cases of even suspected fracture of the base rest in bed for fully three weeks should be enjoined.

P. R. Cooper.

Shaible. (F. G.). **Spontaneous Amputation of an Appendix Vermiformis in a Hernial Sac.** *Albany Med. Ann.*, January, 1907.

According to the author of this paper the appendix is present in the sac of from one to two per cent. of all herniæ. Hernia of the appendix may be congenital or acquired. According to Hutchinson all the congenital cases occur in right-sided inguinal herniæ. In the acquired form the usual causes of hernia, together with undue mobility of the appendix, are the main etiological factors.

Clogg (*Lancet*, Oct., 1906) recently collected 53 cases of strangulated appendix in the sac of a hernia, of which 50 occurred in females, and all of these occurred in femoral hernia.

Barade records 97 cases in which pathological change took place in the herniated appendix, inflammation being found in 30, and strangulation in 47. According to Eccles, strangulation is secondary to inflammation of the appendix, and is due to an acute inflammatory process taking place in a confined space.

In Shaible's case the patient, a female of eighteen years, first noticed a lump in the groin eight years ago, and has worn a truss for the last three years. She was admitted to the Albany Hospital with pain in the groin and an irreducible hernia. On opening the sac it was found to contain three or four inches of markedly congested ileum. The neck of the sac had to be incised, when the loop was returned to the abdomen. On the inner surface of the sac there was what appeared at first sight to be a pro-peritoneal lipoma. On close examination it proved to be a short obliterated appendix vermiformis with smooth ends and without cæcal attachment, which had apparently been amputated by pressure; to it was attached a definite mesentery. Histological examination showed that the lumen had been completely obliterated, the mucosa being replaced by fat and connective tissue. The muscular tissue was slightly atrophic and the peritoneal coat the site of small hæmorrhages.

The author thinks it probable that obliteration of the appendix occurred before the organ entered the sac, though a chronic obliterative appendicitis while in the sac cannot be excluded. In any case it appears certain that amputation was due to gradual constriction of the proximal part of the appendix between divisions of fasciæ, later forming the boundaries of the femoral opening, perhaps assisted by the pressure of the truss.

P. R. Wrigley.

Hessert (W.). **Hæmorrhage from the Stump following Appendicectomy.** *Journ. of Amer. Med. Assoc.*, 1906.

In this article the author records three cases of post-operative hæmorrhage from the stump after appendicectomy, with one death. These cases

all occurred during twelve months, and the technique employed in all was that of crushing the base of the appendix with forceps, inverting the stump by a purse-string without ligature of the base.

The first case was that of a female, aged thirteen years, who was operated on twenty-four hours after the onset of an acute attack, when the appendix was found acutely inflamed, but not perforated. The evening of the operation she commenced to lose blood by the rectum, and lost 600c.c. of fluid red blood within the next twenty-four hours. Dover's powder and dermatol were given by mouth, strychnine and adrenalin hypodermically. Under this treatment she speedily reacted, and made a complete recovery.

In the second case, twelve hours after the removal of an uninflamed appendix, the patient suddenly collapsed, and though she rallied under similar treatment to that adopted in the first case, it was only for a short time, and she died thirty-six hours after the first onset of symptoms.

In the third case, operated on in the quiescent period, the patient suddenly collapsed on the evening of the operation, and lost about 200 c.c. of blood by the rectum. He responded to treatment, and made an uninterrupted recovery.

To understand these mishaps Hessert shows that we must consider the blood supply of the appendix and the anastomosis between the cæcal and appendicular arteries. In type I., which constitute 62 per cent. of cases, the anastomosis between these arteries is high up on the cæcum, and in type II., which constitutes 32 per cent., the anastomosis occurs at the cæco-appendicular junction, and in type III., constituting 5 per cent., the anastomosis is well up on the appendix. In 1 per cent. of cases there is a broad anastomosis in the meso-appendix. It is in type III. there is a probability of hæmorrhage if the stump is merely crushed and not ligatured as the blood-stream flows distalward. He discusses the different methods of treating the stump, and concludes that the best way is by use of the cautery clamp, which sterilises the cut end, and at the same time is an efficient protection against hæmorrhage. If instruments for this are not at hand, the next best method is crushing, followed by ligature, with sterilisation by carbolic acid, followed by inversion of the stump, with a row of Lembert's sutures.

P. R. Wrigley.

Petitjean and Chalier. **Tubercular Dactylitis.** *Gazette des Hôpitaux*, January, 1907.

This affection is met with at all ages, particularly in infancy, but is by no means uncommon in adults. It is not infrequently associated with other strumous affections, but only exceptionally does it accompany visceral disease, that is to say, it is a manifestation of attenuated virus.

Pathological anatomy. Affects more often the hand than the foot, and is frequently multiple. It may originate either in the periosteum or the medulla. Originating in and confined to the periosteum, it is extremely rare; nevertheless, occasionally in the course of surgical

interference after the removal of diseased periosteal tissue, healthy underlying bone is found, and cure results if this bone be left untouched.

Tuberculous osteo-myelitis commences as a deposit of tubercle in the medulla; the tuberculous process absorbs surrounding bone, thus enlarging the cavity, while caseation goes on at the centre. *Pari passu* the periosteum lays down new bone. In a second class of case the periosteum does not react, and a mere shell of bone encloses the caseous material, predisposing to spontaneous fracture. In a third class the bone is destroyed *en masse* and a sequestrum is produced. Whatever the type may be the ultimate tendency is towards extension to surrounding structures—skin, tendons and joints, particularly the skin.

Symptomatology. The affection developes very slowly, pain is often very slight, and the affection is only noticed after the bone has acquired a certain size. Three stages may be recognised—(1) simple inflammation, wherein the bone is enlarged as a whole, and there is no functional disturbance; (2) period of enclosed suppuration, wherein palpation reveals not an osseous resistance, but a softened mass; it may be fluctuating; a sub-periosteal abscess has formed, and at a later stage it invades the soft tissues, thereby producing the typical spindle shape; (3) period of fistulation. Spontaneous cure may take place at any one of the stages.

Prognosis. Generally speaking, good; but in advanced cases considerable deformity is inevitable.

Treatment. In early cases general treatment, combined with immobilisation and local applications, may cure. If, nevertheless, the affection progresses or an abscess has appeared when the case is first seen, operative measures are indicated. Incision and removal of all diseased tissue with drainage suffices in the majority of cases, but where sequestra are present or a joint invaded, resection of bone is necessary, and to obviate great deformities the cavity produced may be filled with decalcified bone. As a last resort amputation may be necessary.

F. G. Hack.

Holth (S.). **A new operation for Glaucoma.** *Norsk. Mag. for Laegevidenskaben*, January, 1907.

The author gives a careful description, with 26 illustrations, of a new operation he recommends for the treatment of glaucoma. The eye is treated with cocain first, then with adrenalin; then a corneo-scleral incision is made subconjunctivally. Iridectomy is performed, and then care is taken to include a portion of the periphery of the iris in the angle of the wound. The object is to establish a subconjunctival fistula leading into the anterior chamber. He has done this operation in 41 cases of glaucoma, in various ways, and with great success in more than half of them. He lays stress on the essential difference that exists between inclusion of a portion of the iris between the edges of a wound in the non-vascular cornea, and inclusion of the iris ("*iridencleisis antiglaucomatosa*") as he recommends it to be performed. He discusses and gives details of the various dangers and advantages of the different operative procedures involved in his method. A. J. Jex-Blake.

Pathology.

Ferrier (D.). **Lumleian lectures on Tabes Dorsalis.** *Crit. Rev.*

Lecture I.

These lectures open with an account of the early work done on this disease, after which its morbid pathology is placed upon an anatomical basis founded upon investigations into the course of the posterior root fibres after their entry into the cord. Without a clear understanding of the intra-medullary path of the sensory fibres no accurate idea of tabes could possibly be formed. Due attention is paid to both exogenous and endogenous systems in the posterior columns, and the important points are fully illustrated.

Coming to the morbid appearances visible to the naked eye, we find the posterior roots thin, flat and grey, especially in the cauda equina; the posterior columns are narrowed and the pia arachnoid covering them thickened and adherent. These appearances are most pronounced in the lumbar and lower dorsal region. Microscopically, there is a progressive sclerosis of the root entry zones, while the endogenous tracts are spared until late in the disease when the upper regions of the cord are attacked. In the cervical cord the degeneration is confined to Goll's column when the lower dorsal and lumbo-sacral roots alone are involved.

The fibres of the exogenous system (arising from posterior root ganglia) are not all attacked at the same time, but in the following order:—(1)Medium fibres—those to Clarke's column and the reflex collaterals; (2) the long fibres, ultimately forming Goll's tract; (3) Lissauer's zone, the fine fibres of which escape for a prolonged period. The tabetic process appears therefore to be selective.

The degeneration stops short at the spinal ganglia, and the sensory nerves distal to these present a normal appearance. Not infrequently the finer peripheral ramifications in the skin and muscles undergo atrophy similar to that of the intra-medullary terminations. The optic nerves and other cranial nerves may be affected; likewise the ciliary ganglion and sympathetic system, especially the cardiac plexus. The disease is a dystrophy or demyelinisation with ultimate destruction of the nerve fibres, followed by neuroglial proliferation. There is no active hyperplasia of neuroglia, nor any vascular changes which could be considered as causative of the disease. Any sclerosis which occurs is secondary to degeneration of the parenchyma.

There is little evidence that the change in the fibres is the result of degeneration of the posterior root ganglion cells; and Ferrier discards

the view that tabes is induced by a neuritis causing dynamical or organic impairment of these cells. According to Nageotte there is a diffuse chronic meningitis implicating the spinal roots, especially at their point of emergence from the dural sac. The portion between the sac and the root ganglion is termed by Nageotte the radicular nerve, and is said to be specially liable to injury from meningitis, and toxins circulating in the cerebro-spinal fluid. Hence a transverse neuritis occurs which induces degeneration of the intra-medullary part of the nerve, the morbid process spreading backwards as far as the ganglion. Ferrier, however, rejects this view on the grounds that meningitis is usually secondary, and much degeneration can exist without any meningitis. He prefers the view that the point where the neurilemma sheath is lost is a locus minoris resistentiæ, and admits that "some conditions probably exist favouring the incidence of noxious influences on this portion of the sensory protoneuron" (intra-medullary).

Lecture II.

In health the centrifugalised deposit from the cerebro-spinal fluid contains an occasional endothelial cell and 1—3 lymphocytes, in a field of 400 diam. There is a lymphocytosis in chronic affections of the meninges—both syphilitic and tuberculous; also in tabes and general paralysis of the insane, even in the early stages, when one may find several hundred lymphocytes in a field. This observation would appear to support the meningitic theory of tabes, but it is advisable to remember that in Landry's paralysis, subacute combined sclerosis or pernicious anæmia and in herpes zoster a lymphocytosis also occurs. Therefore that alone is not pathognomonic of meningeal inflammation. Ferrier is rather inclined to accept the hypothesis of Thomas and Hauser, that the essential lesion of tabes is a dystrophy affecting the sensory protoneuron as a whole. They admit, however, that the intra-medullary portion is more vulnerable, and shows changes earliest. At the same time, the process involves the optic, motor, and sympathetic neurons.

Syphilis seems to be an essential predisposing factor, occurring in 90 per cent. of cases; nevertheless, the posterior columns are apparently specially vulnerable to poisons, not necessarily of syphilitic origin as the tabetic lesion is a parenchymatous dystrophy in no way resembling tertiary syphilis, and tabes is a progressive disease which postulates the more or less continuous generation of the poison. Ford Robertson's doctrine that the bacillus paralyticans (a diphtheroid) supplies the necessary toxin is considered by Ferrier as "not proven."

Lecture III.

This lecture consists in the correlation—in so far as this is possible—of the essential symptoms of tabes with their anatomical and physiological substrata. The degeneration of the centripetal paths is shown by disturbance of tactile sensation (epicritic), sense of temperature and pain (protopathic), and deep sensibility (joint, tendon, muscle). The

impairment of cutaneous sensibility is more marked in its protopathic (algesic) than in its epicritic form, and affects as a rule the legs and feet. The fact that girdle pain and the objective signs of sensory impairment have a segmental distribution is in favour of the root origin of tabetic neuralgias. These are not neuritic, as lightning pains are relatively much more common than neuritis.

Of great importance is the impairment or loss of centripetal impressions, which, arising chiefly in the muscles and acting upon the spinal and subcortical centres (cerebellum), are the basis of reflex muscular tone. Clinically, their loss is shown in diminution or absence of the so-called tendon reflexes with associated hypotonia. This latter condition is the cause of the characteristic attitudes of the ataxic and of the brusque overaction of the muscles of the limbs; and its anatomical basis is degeneration of the reflex collaterals from the posterior columns to the anterior cornua, and of those passing indirectly by Clarke's column to the cerebellum.

Finally, in discussing the anatomical and histological basis of the tabetic pupil, Ferrier considers Marina's work the most satisfactory. This author finds degeneration of the cells in the ciliary ganglion, and of the short ciliary nerves in cases of tabes and general paralysis with the characteristic pupils. Should these be absent the degeneration is absent also. The roots of the ganglion are normal, as are also the oculo-motor nerves with their nuclei. The author lays considerable stress on the irregularity of outline and eccentricity of the pupil which so often precede the Argyll-Robertson symptom, and presumes that all the phenomena have the same anatomical basis, viz., degeneration of the ciliary ganglia and short ciliary nerves.

DAVID ORR.

GARDENGHI (G. F.). **A bacteriological research upon "Hog-cholera," and its association with poisoning by meat.** *Lo Sperimentale.* Anno. lx., fasc. vi.

As the result of an extensive series of observations Dr. Gandenghi concludes that in cases of gastro-enteritis due to meat it is not possible to demonstrate any organisms possessing all the characters of B. suipestifer. His observations also force him to acknowledge that B. suipestifer is much more generally present than is usually believed. It can be found always in the animals affected with "hog-cholera," very frequently in those which are convalescent or have recovered, and not uncommonly in animals apparently healthy, but which have been in contact with diseased animals. He notes, however, that whilst he has found the bacillus in the blood and organs of animals which died of the disease, he was unable to find it in the blood of healthy animals or of those which had recovered. He admits that his observations and controls were too few to enable him to express any opinion upon the opinions of Dorset, Bolton and MacBride that the virus is filtrable and ultramicroscopic.

ARTHUR ROBINSON.

TIBERTI (N). **Contribution to the aetiology of poisoning by meat.** *Lo Sperimentale.* Anno. lx., fasc. vi.

As a result of a research into a series of cases of gastro-enteritis due to eating sausages, Dr. Tiberti concludes that the symptoms were due to a germ which was present in the remains iof the sausages examined. This germ by its morphological, cultural and biological features, together with its pathogenic power, was identified as the bacillus enteritidis of Gärtner. It proved capable of producing a poison to which all the symptoms presented by those who ate the sausages were due. Dr. Tiberti appears to be of the opinion that some of the pigs from which the sausages were made might have been affected with swine pest.

ARTHUR ROBINSON.

CONFORTI (G.). **A contribution to the study of the genesis of Cystic Liver.** *Lo Sperimentale.* Anno. lx., fasc. vi.

DR. CONFORTI is of opinion that the conditions present in a cystic liver of a woman 52 years old, which he examined with great care, point to the conclusion that cystic liver is due in the first instance to a prolonged and perhaps continuous irritation of the bile ducts, followed by proliferation of the adjacent connective-tissue, this proliferation being succeeded by a proliferation of the bile ducts. The new ducts afterwards become successively dilated as the result of increased internal pressure and diminished external resistance.

ARTHUR ROBINSON.

SIRENA (S.). **Anthrax, and the alterations it produces in some of the principal organs of the Guinea Pig.** *Lo Sperimentale.* Anno. lx., fasc. vi.

THE principal conclusions which Prof. Sirena deduces from his experiments are—(1) that after inoculation anhtrax bacilli spread through all the organs and tissues of the body, in the first instance by means of the veins, secondarily by the lymphatics, and finally by the arteries; (2) that they attack the walls of the vessels in which they lie and set up inflammation; (3) that the various acute inflammations of the kidney, the heart and other organs are secondary, and are due to the results of the direct action of the bacilli, that is, they are due to the products of bacillary action; (4) the cells of the nervous system are rapidly affected and undergo regressive involution and chromatolysis.

ARTHUR ROBINSON.

LEVY and KAYSER (H.). **Bacteriological findings in an Autopsy on a "Typhoid carrier."** *Muench. med. Woch.*, December, 1906, p. 2434.

A 48 year old epileptic female, after recovering from typhoid fever in 1903, was returned to the asylum. This was followed by an increased number of typhoid cases in the asylum, and in the beginning of 1905

the source of infection was found to be the case mentioned. Typhoid bacilli were found in her stools then, and repeatedly in 1906, when she suddenly developed pyrexia and abdominal pains, and died of heart failure. The autopsy showed hypostatic pneumonia and appearances of toxinæmia. But typhoid bacilli were isolated in pure culture from the spleen, liver, bile and from the centre of a gall-stone which was found in a chronically inflamed gall-bladder. No other organisms whatever were found in the spleen or liver (special attention being paid to pneumococcus and other pyococci). The points of interest are the long duration of the bacilli in the gall-bladder in a virulent condition, the absence of gall-bladder symptoms, and the auto-reinfection of the patient who evidently died from typhoid septicæmia.

J. M. Bernstein.

Harass. **On the Aerobic cultivation of so-called obligatory Anaerobes.** *Muench. med. Woch.*, November, 1906, pp. 2237-40

Harass, following Tarozzi and Wryosek, managed to obtain, under certain conditions, aerobic cultures of anaerobes (B. butyricus, botulinus, B. of Rauschbrand, malignant œdema), and so upset the idea of a strict anaerobe. His media consists essentially of animal tissues. The fluid media (organ bouillon) with which there was no difficulty, consists of calves' liver or brain (1 lb.), minced and powdered, with water (1 litre); to this may be added 1 per cent. peptone (or grape sugar sometimes), and the whole sterilised in Erlenmeyer's flask for 1—1½ hours in steam, and then put into tubes. In this the anaerobes grow in the depths; the organ pulp sinks to the bottom as a paste. Sometimes colour changes are produced, *e.g.*, red or dark green (with liver broth), crimson or black (with brain broth). Resterilisation, though not interfering with the utility of the media, is best avoided, and the writer describes his method. Solid media were less satisfactory, but ultimately he obtained a suitable media of liver or brain potato-pulp (cooked potato pounded with liver and moistened to the proper consistence). On this the anaerobes grow rapidly and diffusely in twelve hours, so that a pure culture is obtained remote from the site of inoculation, where contaminations remain circumscribed in their growth. Thus not only can anaerobes be grown aerobically, but they can be separated from contamination. The writer tested the virulence of these growths by inoculations into white mice. Malignant œdema and symptomatic anthrax lost their virulence when grown aerobically, but B. botulinus remained virulent.

J. M. Bernstein.

Fox (H.). **Some observations upon the structure of the Spirochæte Pallida (Schaudinn).** *Univer. of Penna. Med. Bull.*, p. 266.

In this paper the author records his observations on the morphology of the S. pallida. He obtained his preparations from both primary and secondary lesions, and used Giemsa's stain, Goldhorn's borax

methylene blue, Wright's blood stain, gentian violet, iron-hæmatoxylin, and Levaditi's method. He found the last three the best for the study of the form, shape, and especially the ends of the spirals. He was not able to see the spindle-shaped bundles and rosette arrangements as reported by Herxheimer and Loeser, but occasionally two organisms were seen side by side, suggesting longitudinal division. Usually the long axis of the organism was straight in sections, but in films made on slides was usually bent. No undulating membrane or contractile pore could be seen with high powers. In four cases there was evidence of longitudinal division, whilst transverse division, a thinning and paler stained area about the middle of the spiral, was often noticed. On many occasions intertwined spirals were met with, but the ends of the organisms could always be traced. The author noted that the organisms in the primary lesions were more typical and regular in their shape than those in secondary lesions, average length of the pallida was 11·14 microns, and average number of turns 10·2. The thinner end of the pallida was found to fade away into a fine filament called by Schaudinn the flagellum, which has been confirmed by other observers. The blunt end may contain a basal body, if the organism is a protozoon, but the author could not confirm this, and suggests that the blunt end may be the blepharoplast itself, with the body unstained, and the spiral the undulating membrane or the two combined. In some of the organisms there was a slight clubbing of one end, which has suggested the coil of a terminal filament, but this could not be verified. He gives the average length of the S. refringens as 12 microns, and the number of curves as six. Bulbous ends were not found in spirals from smears from Vincent's angina, the normal mouth, carious teeth, or an ulcerated surface. The author lays no stress on his observations as affording any clue to the age, sex or stage of development, nor did he find any of the essentials of the protozooa. Zetnow has lately discovered that the flagellum of S. pallida will stain with methylene blue. The paper is illustrated with microphotographs.

G. M. O. Richards.

Beriel (L.). **Hæmorrhagic Pleurisies in Typhoid Fever.** *Gazette des Hôpitaux*, 1906, pp. 1695-6.

After drawing attention to the number of papers which have appeared during the last few years, dealing with the occurrence of pleural effusion in the course of typhoid fever, the author remarks on the frequency with which the effused fluid is of a hæmorrhagic character, suggesting that this fact should raise the question as to whether there is any associated infection. The association of tuberculosis with typhoid is, of course, well recognised as the cause of a number of the pleural effusions of enteric fever. A case is then recorded of typhoid fever in a man who had been infected with syphilis some eight months before; in the fifth week of the fever signs of pleural effusion developed; a

fortnight later he was aspirated, and 200 c.c. of a fluid looking like almost pure blood, were removed; a second tapping a week later gave another 20 c.c. A few days after this the temperature fell, and remained down for a week, when a typical relapse of fourteen days' duration followed; this was followed by convalescence; the dullness had gradually disappeared since the second aspiration. Unfortunately no microscopical examination of the fluid drawn off was made. The facts that the case ended in a complete cure, that there was no tendency to, or history of family, tuberculosis in the case, and the time of onset of the condition—in the stage of decline—tend to make the author regard the case as typhoidal, though the syphilitic element cannot be altogether excluded. A point against the syphilitic theory is that at the time the pleurisy came on the patient had no evidences of syphilis then present, whereas such pleurisies are generally synchronous with the appearance of specific eruptions or of mucous plaques, and are more commonly dry, less frequently serofibrinous, and only rarely hæmorrhagic. The patient had had mercurial treatment for nearly four months from the time of appearance of the primary sore. When the patient was seen 18 months after his recovery he was still in perfect health, having no cough, and having had in the meantime no evidences of syphilis.

FRANK E. TYLECOTE.

EMERY (W. D'E.). **The micro-organisms of Influenza.** *Practitioner*, January, 1907.

A POINT which has recently received attention is that the influenza bacillus will grow without hæmoglobin, on ordinary media, provided that certain other bacteria accompany it. Amongst these other bacilli are *B. prodigiosus*, *B. diphtheriæ*, *staphylococci*, etc.; these bacilli will act in this way even if they have been killed by heat. It is suggested that the influenza bacillus may live for long as a harmless saprophyte, and may only be suddenly raised in virulence as a result of its entrance into the body with other pathogenic organisms. It is now plain that certain organisms occur, indistinguishable from Pfeiffer's bacillus, which do not cause influenza, and that a disease which is clinically influenza may be caused by other organisms than this bacillus. The bacillus found in large numbers in whooping-cough sputum is practically identical with *B. influenzæ*, and, in a slightly less degree, so is the Koch-Weeks bacillus of conjunctivitis. In the earlier years of the influenzal epidemic Pfeiffer's bacillus was usually found in pure culture; later it began to be associated with *M. catarrhalis*, and nowadays in clinically typical influenza *M. catarrhalis* is often found alone—while other groups of cases give pure cultures of *pneumococci*, *streptococci* or *pseudo-diphtheria bacilli*. But clinically identical toxic symptoms result from all these epidemics, and yet these symptoms are not necessarily caused by these various organisms, when they are not associated with an influenza epidemic. The only satisfactory solution is

hypothetical and unsupported by evidence. It is that influenza is a specific disease, due to a definite single cause, and that this cause is undiscovered, and perhaps unsuspected; it may be an invisible microbe, a protozoon, or some depressing influence acting directly on the human constitution, and of a nature as little known as were bacteria when influenza received its name. We assume that this factor has some action on the body, causing definite symptoms, and has the power of lowering the resistance of the body to certain organisms.

FRANK E. TYLECOTE.

SCHEEL (V.). **Thymus Death.** *Nordiskt med. Arkiv.*, 1906. Afd. 2.

IN a résumé of the post mortem examinations made at the Kommune Hospital at Copenhagen during the year 1905, the author gives an account of three cases in which sudden death appeared to be associated with enlargement of the thymus gland and nothing else. The patients were 6 weeks, 11 months, and 10½ years old; each was found dead in bed in the morning; their thymus glands weighed 22, 38, and 40 grams respectively. The "normal" weight of the thymus is, as is well known, very variable. Scheel gives the following figures, having weighed the thymus in 188 cases:—

Age in Years.	Number of Cases.	Weight of the Thymus in grams. Average.	Maximum.	Minimum.
0— ½	27	5·9	19·1	1·2
½— 1	34	7·3	21·0	1·75
1— 5	17	8·5	23·3	1·5
10—40	42	11·0	23·0	2·0
40—70	48	13·0	25·2	1·4
70—85	20	11·6	38·4	1·15

The three cases given above are not included, nor is a boy of 12, in whom the thymus weighed 47 grams. In adults the gland contains much fat, and the lower weights are found mainly in emaciated persons. The large thymus in children is not always associated with a general hyperplasia of the lymphatic glands, as Paltauf states it is. The thymus in the three cases above was microscopically normal

Scheel believes that death from enlargement of the thymus may occur in several ways. In some cases the thymus may compress the trachea and cause asphyxia. In others it may surround and compress the aorta and pulmonary artery, and so stenose these vessels; this would account for the not infrequent enlargement of the heart associated with enlargement of the thymus; thus the heart of the child 11 months old was enlarged, and weighed 100 grams, and the left ventricle was dilated while both ventricles were hypertrophied. Scheel also quotes the case of a child 1 year old dying of pneumonia; here the thymus weighed

22 grams and the heart 80 grams, the right ventricle being markedly hypertrophied. In other cases, thymus death may be due to the absorption of toxins from the gland, with consequent toxic, or perhaps reflex, paralysis of the heart, as Paltauf suggests. Scheel does not believe that pressure on the vagi can have anything to do with thymus death. In cases where the abdominal organs are congested and the lungs are not, he thinks that paralysis of the heart is the cause of death; where, however, the lungs are congested and ecchymoses are seen in the heart, lungs and thymus, it is probable that death is due to asphyxia. Possibly, too, acute swelling of the thymus may occur, caused by screaming etc

A. J. Jex-Blake.

Therapeutics.

Cavazzani (A.). **The treatment and cure of certain cases of Atrophic Cirrhosis of the Liver.** *Riv. crit. di clin. med.*, 1907. Nos. 2 and 3.

Cavazzani has been much impressed by the good effects of the fresh grape treatment of hepatic cirrhosis. From 2 to 5 lbs. of the ripe fruit are given to the patients daily, while they are also submitted to a general medicinal and hygienic regimen. The grape-cure improves the general condition, appearance and appetite, markedly increases the urinary secretion, causes the rapid and permanent disappearance of ascites, and enables patients who are to all appearances hopeless cases to return to their occupations. He gives details of five cases in which the patients, aged from 30—60, have enjoyed good health for up to four years after the treatment, which of course may be repeated annually with advantage. The grape-cure is not invariably a success in this condition, but Cavazzani is not in a position to give figures representing the percentage of cures. There are no contra-indications to the grape-cure; it is effective, he thinks, in virtue of the ferments and grape-sugar ingested by the patient; it does not restore the enlarged spleen, the atrophic liver, or the dilated superficial abdominal veins, to their normal conditions.

A. J. Jex-Blake.

Geijerstam (E. af). **Migraine treated by Hypnotism.** *Hygiea*, December, 1906.

The author quotes Möbius, who says that migraine is a disease *sui generis*, in which there are no changes in the peripheral nerves, but where heredity is an important factor. Oppenheim holds analogous views, adding that hemicrania may arise reflexly, particularly when the nasal mucous membrane is diseased. Henschen in 1881, on the other hand, found numerous palpable changes, smaller or larger deposits, infiltrations, or thickenings, in the fibrous subcutaneous tissues of the head and neck, with slight loss of cutaneous elasticity or œdema of the skin, in many of his cases of hemicrania; hence he thought it was not a disease *sui generis*, but was symptomatic of rheumatism in such cases, and was due to this rheumatic inflammation of the skin, subcutaneous tissue, periosteum, and nerves, in the scalp and neck. All

authors are agreed in finding a nervous or neurotic family history in cases of migraine—Henschen found it in 86 out of 94 cases. As regards treatment, Henschen recommends local treatment, Möbius general, speaking broadly. Geijerstam gives brief accounts of 15 cases in which he has employed hypnotism, and mentions half-a-dozen references to the literature of the subject. Three of his cases were probably rheumatic; most of the others were cases of genuine migraine. The patients received various numbers of hypnotic séances, usually 20—80; one had over 500. Six patients were cured, three for periods of 5, 3, and 2 years respectively; the other nine were all relieved considerably by the treatment.

A. J. Jex-Blake.

Reviews.

"Surgery—Its Principles and Practice." By various Authors. Edited by William Williams Keen, M.D., LL.D. In five volumes, large octavo. Vol. i., pp. 984, with 258 illustrations and 17 coloured plates. London and Philadelphia: W. B. Saunders Company, 1906. Price: cloth, 30s. net.

The volume before us is the first of a series now appearing under the able editorship of Professor Keen, and after a careful perusal of the work we have no hesitation in stating that this "Surgery" will at once take a high rank in surgical literature as an authoritative exposition of the scientific principles underlying the practice of this rapidly advancing art. In the choice of his helpers Professor Keen has been happy to select some of the best writers, and the whole volume is exceptionally good.

To quote from the preface: "It has been our aim to record the very latest well-established knowledge so that our work should be thoroughly 'up-to-date,' yet with few, if any, passing surgical novelties," and the first volume meets this aim admirably.

Chapter I. gives a short historical sketch of the "Fathers of Surgery," and in this delightful summary is briefly outlined the lives of some of the ancient and modern giants of surgery, and the more important work that they performed as pioneers in the art. In a text-book produced in the United States it is natural that the author of this section should devote some very interesting pages to an account of the valuable contributions made by American surgeons of the last two centuries, but he admits their indebtedness to English surgery, and, coming to our own time, full justice is done to the name of Lister.

Chapter II. deals with Surgical Physiology, and is from the able pen of that accomplished investigator, Dr. George W. Crile. The physiology of the circulation of the blood and of respiration are treated from the point of view of surgical work, and the views of this author are too well known to need recapitulation here. Suffice it to say that Dr. Crile's article should be read by every surgeon and anæsthetist.

In Chapter III. Professor Da Costa describes the examination of the blood, and the bearing of this in clinical surgery is fully detailed.

Infection and Immunity are dealt with by Professor Hektoen in Chapter IV., and his description of the complex problems of immunity is lucid to a degree. An excellent chapter by Professor Adami on Inflammation follows, and affords one of the best accounts of this difficult subject that we have seen.

Chapters on Suppuration, Abscess and Fistula, on Ulceration and Ulcers, and on Gangrene, come next in this volume, and only considerations of space prevent us from outlining these more particularly, but they are equally good.

Chapter IX., by Professor F. C. Wood, is on the Process of Repair, and is a thoroughly sound piece of work.

Thrombosis and Embolism, Erysipelas, Tetanus, the Diseases caused by Special Infections, and those directly derived from Animals, Insects and Reptiles, form the subject matter of Chapters X. to XIV. inclusive, and are followed by chapters on the Traumatic Fevers, on Scurvy, on Rickets, on those lesions of Tuberculosis that call for surgical treatment, on Chancroid and on Syphilis.

The penultimate chapter of this volume is by Mr. Bland-Sutton, and is devoted to a consideration of Tumours. This is practically identical with Mr. Bland-Sutton's well-known monograph on "Tumours: Innocent and Malignant," and to this subject are allotted 144 pages of very interesting matter.

The last chapter is by Dr. Crile, on Wounds and Contusions, and we would draw special attention to his valuable contribution to the subjects of Shock and Collapse.

The volume is well printed, the illustrations clear and artistic, and correct, whilst the coloured plates are of unusual merit. A feature of the book is the very full bibliography appended to each chapter.

In concluding this very brief notice, we recommend this volume to our readers with every confidence as being "up-to-date," and, indeed, almost indispensable to the modern surgeon who wishes to keep himself in touch with the best surgical work.

"The Technic of Operations upon the Intestines and Stomach," by Alfred H. Gould, M.D. Pp. 302, with 190 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Price 21s. net.

This book is the result of a three years' research on the technique of gastro-intestinal operations. Experiments were made chiefly upon dogs, the object being to simplify, where possible, the standard operative methods. After a careful study of each operation upon animals, the method was tried again upon the cadaver, for "anatomical corrections." No details of these experiments are given, but the results are tabulated in the chapter on "The Repair of Intestinal Wounds" which commences the book. This chapter is illustrated by some excellent drawings showing the condition of the suture lines at various intervals after operation.

Chapter II. is devoted mainly to the consideration of suture materials, needles, knots, sutures and clamps, the various manipulations and stitches being clearly described and freely illustrated.

Chapter III. deals with the anatomy of the intestines, with special reference to the blood and lymph supply, and intestinal localisation (Monks).

In Chapter IV. the various operations upon the intestines are described, noting, firstly, the indications; secondly, the different methods of anastomosis and suture; thirdly, the actual steps and details of the operation. These, again, are clearly and amply illustrated.

In Chapter V. the operations upon the stomach are similarly dealt with.

The author has undoubtedly here succeeded in presenting the most clear, complete and up-to-date account of the somewhat complicated technique of gastro-intestinal operations which we have yet seen. The mounting of the book leaves nothing to be desired.

"Atlas and Text-Book of Human Anatomy." By J. Sobotta and J. P. McMurrick. Vol. ii.; pp. 194, 214 illustrations. Philadelphia and London: W. B. Saunders Company, 1906. Price 25s. net.

This atlas, the first volume of which has been already reviewed in these pages, has now reached its second volume, which fully maintains its early promise. Indeed, regarded simply in the light of an atlas, it is difficult to see how it could be improved, although of course the text is hardly an advanced treatise on anatomy. It is devoted to the consideration of the digestive, respiratory, urogenital organs and the heart.

The section dealing with the organs of digestion is particularly good; it is noticeable that the author adheres to the old definition of the extent of the rectum, and does not include the first part in the sigmoid loop.

That part most difficult of description, the peritoneum, has devoted to it many excellent plates and diagrams, the author rightly relying on them rather than on prolonged verbal descriptions to make his meaning plain.

The publishers have spared no trouble or expense, and if the pictures are complicated, the main plate is left free from print of any kind, and the description is printed on a key diagram by the side.

The differences noted in the first volume between the nomenclature adopted and that in common use among students in England (although nothing can be said against it, for it is a step in the right direction) is not so noticeable in this volume.

In the chapters on the nasal cavities, the anatomy of the accessory sinuses is only briefly discussed, as they had been already spoken of in that part of the first volume devoted to the skull. Seeing their complexity and importance in the soft state, it would be almost better to give them more space at the risk of recapitulation. Development is shortly considered where necessary, as in the peritoneum and urogenital organs. The plates illustrative of the heart and pericardium are worthy of special praise.

The use of such an atlas as this properly combined with careful dissection will do far more towards the perfect knowledge of anatomy than any amount of wordy descriptions of relations of various structures.

The printing and paper of the atlas are all that could be desired.

"Animal Micrology." Practical exercises in microscopical methods. By Michael F. Guyer, Ph.D. Chicago: The University of Chicago Press. London: T. Fisher Unwin, 1907. Price 7s. 6d. net.

This book is intended as a guide for students who are just beginning to use the microscope for the study of animal tissues. It consists of a series of practical exercises on the methods of histological investigation. The student is instructed to procure certain animal tissues and to use them to carry out himself all the various processes necessary for their investigation. After preliminary chapters on the preparation of reagents and a general survey of the different methods, a chapter follows on fixing and hardening. Then the four methods of section cutting (freehand, paraffin, celloidin, freezing) are described in detail, with instructions as to staining sections prepared by each. Then follow chapters on metallic impregnations, isolation and minute dissection, decalcification, and injection. There are also chapters on the blood, the staining of bacteria and embryological methods, and, lastly, a chapter on the reconstruction of objects from sections.

In these chapters simple methods of fixing and staining are alone described. Each method is given in great detail, and at the end of each chapter is a most useful list of memoranda giving hints on various points, especially on the means of overcoming the many difficulties which may arise. There is a specially useful description of the difficulties which may be encountered in the paraffin method, and the means for overcoming them.

There are numerous appendices. One of these is devoted to a description of the principles of the microscope and the mode of using it; another to methods of fixing and staining not given in the body of the book. A third appendix consists of a tabular list of different tissues with the modes of preparation appropriate for each; and a fourth deals with the collection and preparation of material for a course of zoology.

We are rather surprised not to find any mention of Mann's albumenised slides in the description of the paraffin method, as this is undoubtedly the most satisfactory method of manipulating paraffin sections.

We have great pleasure in recommending this admirable book as a course of instruction in the methods of histology.

It is unfortunate that the author has seen fit to adopt a new word in the title of this work in place of a better known word which would indicate its contents more clearly.

"The Prevention of Cancer and its Relation to that of some other Diseases and Calamities." By C. B. Keetley, F.R.C.S. London: Baillière, Tindall and Cox, 1907. Price 1s. net.

The numerous theories dealing with the origin of cancer may be divided into two classes—the parasitic and the non-parasitic. The opponents of the parasitic theory have repeatedly criticised the evidence

in its favour, and have brought forward weighty arguments against it. On the other hand, the upholders of the theory continue to submit the same evidence without attempting to answer the criticism, or to criticise the arguments, of their opponents.

The author of this pamphlet is no exception to this rule. He is a Parasitist, and we have the same arguments and the same neglect of other people's views.

The means suggested for the prevention of cancer are those which would be valuable in the case of a parasitic disease, and are useful in any case. They comprise such matters as cleanliness, destruction of discharges, excision of growths, etc.

The author refers to recent experimental studies on cancer, but here again he quotes only those which appear to be in his favour, neglecting other work equally important.

The last section of the pamphlet is on "the connection of the problem of the prevention of cancer, tubercle and venereal diseases with alcoholism, with the low birth-rate, with immorality, and with one another." In it he supplies some facts worthy of consideration by those well-meaning but mistaken people who oppose the rational means of preventing the spread of venereal disease.

The pamphlet is worth reading for those who wish to know the views of an experienced clinician on the subject of cancer.

"Tumours Innocent and Malignant: Their Clinical Characters and Appropriate Treatment." By J. Bland-Sutton, F.R.C.S. Fourth edition. London: Cassell and Company, 1906. Price 9s. 6d. net.

It is hardly necessary to give an extended notice of this well-known book. Within its limits it is an invaluable addition to the surgeon's library, but these limits should be clearly understood. The author deals with tumours only in relation to their clinical characters and appropriate treatment, and does not profess to deal with the pathological aspect of tumour growth. As a matter of fact, what pathology there is is usually unsatisfactory and, in places, misleading.

In this edition chapters have been added on heterotopic teeth, the causation of cancer, chorionepithelioma, and on tumours of the testis and ovary.

We do not like the classification adopted by the author. In it fibroma finds no place, while separate places are allotted to myomata and uterine fibroids. In the subdivision of carcinoma no mention is made of the columnar-celled type. A separate place is allotted to myeloid sarcoma, which the author calls myeloma, but he neglects entirely the tumours which are associated with myelopathic albumosuria, which are more entitled to the term "myeloma" than are the giant-celled sarcomata. It is surely drawing somewhat on the imagination to say that "myeloma" (myeloid sarcoma) "is composed of tissue identical with the red marrow of young bone."

This book should be read by everyone who desires a succinct account of the clinical characters and appropriate treatment of tumours. It is very readable, and the references to comparative pathology are interesting.

"The Essential Similarity of Innocent and Malignant Tumours." By Charles W. Cathcart, M.A., F.R.C.S. Bristol: John Wright and Co. London: Simpkin, Marshall, Hamilton, Kent and Co. Limited, 1907. Price 9s. 6d.

The difference between innocent and malignant tumours is of the greatest importance from a clinical as well as from a pathological point of view, and any research on the subject is to be welcomed. In general we can say that it is not difficult for a pathologist to give a definite opinion as to the clinical behaviour of a tumour after making a histological examination of it. There are always, however, cases in which an expert pathologist is in doubt as to whether a particular growth is innocent or malignant. The number of these doubtful cases would be very much diminished if it were possible to submit the whole tumour to histological examination. Naturally much depends on the feature which the pathologist adopts as the criterion of malignancy.

The author of the book before us approaches the question from the standpoints of clinical observation and macroscopic morbid anatomy, and he forms the opinion that there is no essential difference between innocent and malignant tumours, but that in any given organ a series of tumours can be found of essentially similar structure showing all gradations from the obviously innocent tumour to one which is intensely malignant, and that it is impossible to divide this series into two parts so as to be able to say that the tumours in one part are innocent, and in the other malignant. The author confines his illustrative cases mainly to the tumours of bone, and gives three series—the first including the cartilaginous tumours; the second, bony tumours arising from the bone and periosteum; and the third, the central tumours arising from the medulla. In each series cases are arranged in ascending order of malignancy.

The author does not give sufficient information to enable us to gather whether, or not, the differences in the clinical course correspond accurately to differences in histological structure, and the photo-micrographs given do not show sufficient detail to enable us to come to a conclusion on this point. The value of the book would have been much enhanced if an accurate account of the histological characters had been given. Probably the essential difference between a malignant and an innocent tumour consists in the mode of growth; in one it is infiltrating, in the other, not. This difference is, however, only to be made out, in many cases, by careful histological investigation.

With the main thesis of the author most, if not all, pathologists will agree, namely, that the principles underlying tumour growth are the same whatever the nature of the tumour, and especially that in cancer

research, cancer is not to be regarded as a disease *per se*, but is to be considered merely as one of a large group of diseases, all of which have many things in common.

We do not like the expression "Transformation of innocent into malignant tumours." In most cases so described it would be more accurate to say that a malignant tumour arises in an innocent one than to say that an innocent tumour is transformed into a malignant one.

The book is well printed, and the illustrations are good.

"A Text-book of Pathology." By ALFRED STENGEL, M.D. Fifth edition. Philadelphia and London: W. B. Saunders Company. Price 21s. net.

THIS text-book, which has now reached its fifth edition, retains the same general arrangement as in previous editions, but it has been revised and somewhat enlarged.

We cannot confidently recommend this work as a text-book for students. While the subject matter is, on the whole, good, yet the information tends to be scrappy and is conveyed in an uninteresting manner. The sections on "Pathologic Physiology" are a useful feature of the book.

The definitions are unsatisfactory. For example, it is not a definition of cholera to say that "Cholera is an acute infectious and contagious disease caused by a spirillum or vibrio."

It is rather strange to find half a page devoted to the different forms of mitosis in necrotic cells, and we do not understand how a cell which is necrotic can undergo any form of mitosis.

In the chapter on the blood we find no mention of the blood volume and its changes in anæmia.

The book is not free from contradictory statements. Thus in one place the kidney, and in another the spleen is mentioned as the most frequent seat of amyloid disease. There is a mistake in the title of Plate IV. There is a useful appendix on pathological technique.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

ON THE DIAGNOSIS OF EARLY PULMONARY TUBERCULOSIS.

(Presidential address delivered before the Manchester Medical Society on March 6th, 1907.).

By S. Moritz, M.D., M.R.C.P. (Lond.),

Senior Physician to the Manchester Hospital for Consumption and Diseases of the Chest and Throat and to the Crossley Sanatorium; Lecturer on Laryngology and Rhinology in the University of Manchester.

There is no other chronic disease, in which an early diagnosis is of such paramount importance as in pulmonary tuberculosis. This importance is at once shown when we look at the results of treatment obtained at the Bowdon and Delamere Sanatoria in the different stages of this disease, we find that of those admitted in the first stage 96 per cent. show considerable improvement, whilst of the selected cases, who are admitted, though suffering in a more advanced stage, only 30 per cent. show any benefit and this frequently of short duration.

Though similar data are continuously published by all Sanatoria, it is an almost daily experience of those connected with them, that patients are recommended to their care as eminently suitable for treatment, who have arrived at too late a stage for any treatment to be of avail, the delay having arisen from a mistaken diagnosis, too much reliance having been placed on the fact, that no tubercle-bacilli had been found in the sputa and that the patient was therefore assumed to suffer from bronchitis only. As the patient was getting worse a renewed sputum examination then revealed at a later date the presence of tubercle-bacilli, but, of

course, the assumption that the tubercular disease had only commenced at this date is entirely erroneous.

Since Koch's great discovery of the tubercle bacillus as the cause and only cause of tuberculosis, since it has been found possible—though sometimes difficult—to prove the presence of the T.B. in all pathological conditions and tissues to be considered tubercular, it has, I am afraid, become customary to transfer the diagnosis of tuberculosis and with it that of pulmonary phthisis from the bedside to the bacteriological laboratory.

Let us see then (1) what bacteriological methods are able to do for the diagnosis of tuberculosis and especially for that of early pulmonary tuberculosis, and (2) how far we have to rely on the older clinical methods. But before entering upon the description and a criticism of these methods, it will be well to come to an understanding as to what we may consider the earlier stages of pulmonary tuberculosis.

Classification of Pulmonary Tuberculosis.

For a considerable time, already among the older writers, it had been customary to distinguish three stages in the clinical picture of pulmonary tuberculosis. The first stage that of the commencing disease, the second stage that of the manifest disease and the third or final stage that of cavitation. Bayle, who wrote before the invention of auscultation, added from purely anatomical reasons a fourth, preceding stage, in which there was as yet no clinical symptoms and which he called "Phthisis occulta" or "Germe de la Phthisie." Bayle's pupil, Laennec, the inventor of auscultation, re-established the old division into three stages, bringing the anatomical conditions into a parallel with the physical signs discovered by him. He distinguished as a first stage that of infiltration or as he called it of "accumulation of tubercles" with the clinical signs of dullness on percussion and diffuse bronchophony on auscultation; the second stage that of softening with the auscultatory signs of moist râles, pectoriloquy and bronchial breathsounds; and a third stage , that of cavitation with its accompanying symptoms. This division of Laennec has been the one more or less accepted until recent times. Everyone recognised the more or less schematic nature of this classification and it was

difficult in many cases to know under which group to count them, as the stages are by no means sharply marked out, but on the contrary run imperceptibly into one another. During more recent times it was felt that more weight should be attached to the *extension* of the lesions, than in Laennec's classification, and the German Imperial Health Office first introduced for its Sanatoria a new classification, the general adoption of which was recommended at the International Congress for Tuberculosis at Paris, and this is the one also adopted at the Bowdon and Delamere Sanatoria. According to this we distinguish

1st Stage. Slight affection of the lungs, the lesion being limited to small areas of one lobe only; if situated at the apex, not extending below the clavicle or the spine of the scapula (but including cases which show on auscultation small subcrepitant râles within this area).

2nd Stage. More advanced disease, than that defined as the 1st stage, but not advanced as far as the

3rd Stage. Solidification of one whole or several lobes or cavitation.

We see, therefore, that the 1st stage includes cases which were formerly counted as 2nd stage, namely, cases with commencing softening (moist râles) as long as they are confined to a small area of the lung, but that cases which would have been classified under 1, as soon as the solidification and infiltration exceeds a moderate area are now counted under 2 and 3.

Bacteriological Signs of Tuberculosis.

After this preamble you will allow me first of all to consider the bacteriological signs of tuberculosis.

The diagnosis of pulmonal tuberculosis is made absolutely certain when we find tubercle bacilli in the sputum. For this examination Gabbet's or Ehrlich's or Cornet's modification of Ziehl's stain may be employed.*

When only few bacilli are present in the sputum Biedert's,[1] Stroschein's, van Kétel's or Spengler's methods of liquefaction of the sputum with consecutive centrifugalising should be employed. For this purpose caustic soda or boracic acid or carbolic

acid or pepsin are added to the sputum to liquify it, the mixture is then centrifugalised and the bacilli may then be found in the sediment.

Another method is that of Hesse,[2] he calls it "Anreicherung" (enriching). A small particle of the sputum is transferred to a suitable medium and then placed for 5 to 24 hours in an incubator at a temperature of 37°C.*

By these methods one usually succeeds in discovering the T.B. when present in the sputum. But we can only expect to find the bacillus at a time when already ulceration and disintegration of diseased tissue is taking place and when there is free communication between the softening tubercular focus and the trachea. Frequently the bronchus leading to the diseased spot is found obstructed by inflammatory changes and no tubercle bacilli are expectorated. These conditions occur very frequently in incipient phthisis and in many cases, where the sputa are regularly examined, it is found that the periods in which the sputa contain bacilli are intermittent. Thus at Delamere in 254 cases, in which there were definite signs of early pulmonary tuberculosis, no bacilli

* *Biedert's method of sedimentation:* About half an ounce of the sputum is thoroughly mixed with 1 oz. of water and 4 to 8 drops of a solution of caustic soda. Boil slowly in a porcelain beaker, adding gradually from 2 to 5 ozs. of water until completely liquified. Centrifugalize and examine the sediment according to Gabbet or Cornet.

Stroschein liquifies the sputum, with 1 to 3 times its quantity of a 33 per cent. solution of boracic acid; *van Kétel*, by adding one-third of its quantity of a 50 per cent. solution of carbolic acid.

Hesse's method of enriching: The following medium is recommended: Nährstoff Heyden 5, Sod. Chlorid 10·0, Glycerin 30·0, Agar-Agar 10, Normal solution of crystallised soda (28·6 : 100) 5, Aq. dest. 1000.

Note to page 75.

* *Gabbet's Method:* It is quickly carried out. On the cover-glass preparation a few drops of the following freshly filtered solution are allowed to fall. Fuchsin 1, 0, 5 per cent. sol. ac. carbolic, 100; alcohol. absol., 10. The glass is heated over the flame until steam rises, allowed to cool, and heated again 2 or 3 times more. The cover-glass is then washed and then placed in a solution of methylene blue 1, 25 per cent. H_2SO_4 100, washed again and dried over the flame, then mounted with Canada-balsam.

Ehrlich's method: A saturated alcoholic solution of fuchsin is added, drop by drop, to a freshly filtered solution of anilin-oil, (5 cc. to aq. dest. 100,) stain by heating as in Gabbet's method, shake off superfluous moisture, decolorise for a short time in 15 to 20 per cent. HNO_3, rinse in 60 per cent. alcohol until the cover-glass is only faintly red, rinse in water and restain in a dilute watery aqueous solution of methylene blue.

Cornet's modification of Ziehl's stain. Drop freely Ziehl's stain on the cover-glass (Ziehl's stain: fuchsin 1, alcohol absol. 10, 5 per cent. aqueous solution of carbolic acid 100), heat, rinse in water, place for short time in 2½ per cent. HNO_3, rinse in 60 per cent. alcohol, then in water, then stain ½ to 1 minute in a dilute aqueous solution of Methylene blue.

were found in 121, *i.e.*, in 47 per cent. of the cases, and in 23 cases, *i.e.*, 9 per cent. after repeated examination only.

Occasionally—I may say not rarely—the administration of a few doses of iodide of potassium to the patient, or the continued administration of this drug for 3 or 4 days, seems to clear away, I imagine, the inflammatory bronchial swelling just mentioned, and T.B. reappear in the sputum or are found where they had been sought before in vain. Sometimes where the sputum is very scanty, I have found it to become more abundant after applying a wet pack to the patient's chest. This may be done and potassium iodide given at the same time. Occasionally when no sputa are said to be brought up, or when there is said to be no cough, one is able to obtain a little bronchial secretion by introducing a laryngeal probe—of course under the guidance of the laryngoscope—to the interarytænoid space, the so-called cough-point; a fit of coughing is produced and the secretion thrown against the laryngeal mirror, this secretion I have occasionally found to contain T.B. Or a laryngeal cotton-wool holder may be introduced in the same manner and some secretion fished up on it.

Animal Experiments.

Prof. Delépine found that in cases where T.B. were very sparingly present in the sputa, such sputa were still able to infect guinea pigs in a characteristic manner, when inoculated into the peritoneal cavity. Though usually unnecessary for the proof of T.B. in sputa, this method is extremely valuable to prove the tubercular nature of particles of tissue, where the presence of T.B. may be very difficult or impossible to shew.

Five or six years ago I attended a gentleman suffering from laryngeal and pulmonary tuberculosis of extremely rapid course, of which he ultimately died; he had only been married a short time, and not long after his death his wife consulted me for what at first appeared ordinary tonsillitis. The tonsils were only slightly enlarged, but red, and also painful on deglutition; there was no deposit; the patient's temperature was slightly raised, varying from 99·5° to 100·5°. This condition had lasted for about a fortnight when she saw me. Her lungs, etc., seemed perfectly healthy, and she was a strong, well-formed

woman, with a good thorax, in whom—excepting the possibility of infection from her tuberculous husband—one would not have thought of tuberculosis. I advised the removal of her tonsils, which I carried out as thoroughly as possible. Prof. Delépine was kind enough to examine the removed tonsils. He made a number of sections, but could not discover any tubercle or tubercle bacilli. He then inoculated a guinea-pig; the animal became tuberculous, and then on most careful re-examination of the tonsils in numerous sections Prof. Delépine discovered a few tubercle bacilli in them. I am glad to say this patient made a good recovery from the small operation, and has never developed general pulmonary tuberculosis; she is alive and well.

Though not strictly appertaining to my subject, I may mention that I had opportunity to observe one similar case of tuberculous tonsillitis. In this case the husband had been infected by his wife; the tonsillitis and feverishness had lasted four weeks when I saw the patient; he had then no lung symptoms, but in spite of extirpation of the tonsils, which were proved tuberculous by inoculation of a guinea-pig, he developed pulmonary phthisis of at first a rapid course, but the disease has now, after several years' sanatorium treatment and a stay abroad, become arrested.

Inoculation in the Mamma of Animals.

Whilst the inoculation of the guinea pig with suspected products, according to Prof. Delépine, may form a most valuable help to diagnosis, the delay of 6 to 8 weeks, which it imposes before the animal will show the distinctive signs of tuberculosis is a great drawback. Nocard [3] therefore recommended the inoculation of the mamma of a suckling guinea pig, one can then obtain T.B. in the milk of the animal as early as a week after the inoculation, whilst at the same time the gland becomes inflamed and swollen and the inguinal lymphatics affected; three weeks later the animal shows general signs of tuberculosis. This method has been further developed by Nattan-Larrier [4] who has proved its efficacy as a diagnostic help in tubercular pleuritis, peritonitis, and meningitis. The mamma of the guinea pig, inoculated with the serous effusion of tubercular pleurisy, secreted milk containing T.B. on the ninth to twelfth day after inoculation—with pus from tubercular joints nine to twelve days after inoculation—in six cases of tubercular

meningitis in from five to fifteen days—in four of these cases no T.B. could be found in the cerebro-spinal fluid—after inoculation with tubercular urine in from five to six days. Sputa have to be repeatedly heated to 54°C. before inoculation, to avoid a general phlegmone of the mamma, and the milk showed the presence of T.B. in from six to fourteen days.

Serum Diagnosis.

A method which promised much for the diagnosis of tuberculosis, but in regard to the value of which there is great difference of opinion, is that of serum diagnosis introduced by Arloing.[5] * This investigator had succeeded in growing what he calls "cultures homogènes" of tubercle bacilli in bouillon, which underwent agglutination on the addition of blood serum coming from individuals affected with tuberculosis. Widal, Ravant, Bendix, Romberg and other authors confirmed Arloing's investigations, whilst Beek, Rabinovitch, and Horton Smith declared it of no value.

Arloing and Courmont obtained the following results as to the reliability of serum diagnosis.

In 400 hospital patients, taken at hazard, they observed (1) in patients, clinically diagnosed as tubercular, a positive reaction in 88 per cent., a negative reaction in 12 per cent.; (2) in patients clinically non-tubercular, a positive reaction in 35 per cent., a negative reaction in 65 per cent.; (3) in apparently healthy in-

* To obtain Arloing's "Cultures homogènes" of Koch's bacillus, prepare pepsin 1 to 2, glycerin 6, veal or beef bouillon 100, sterilize; pour 25 cc. in a sterilized flagon of 75 cc. capacity, sterilize; inoculate 15—20 drops of a culture of tubercle bacilli one week old. Place in an incubator at 38° or 39°C. for a month, but shake the flagon up daily for 2 minutes When the cultures seem ready, they are tested in regard to their agglutinability by means of a test-serum—those too poor are put back in the incubator, those too rich are further diluted. About 1½ cc. of the blood to be examined is required, the agglutination can be observed with the naked eye. The reaction is carried out by taking sterilized tubes 7 mm. wide, 4½ cm. high, five such tubes are usually employed, in the first three 10 drops of the culture are placed, in the fourth 15, in the fifth 20. The first tube is left without the addition of serum as a test, the second tube receives two drops of the serum, the third, fourth and fifth tube one only. The serum is thus tested in proportions of 1 in 5, 1 in 10, 1 in 15, and 1 in 20. The reaction takes place in from 2 to 6 hours, and is characterized by a complete clearing up of the previously cloudy culture and the precipitation of the bacilli in small snow-like flakes. The reaction is "negative" when the tube remains as cloudy as the first "test" tube, "incomplete" when there is some precipitate but not entire clearing, "positive" when the tube gets quite clear.

dividuals, a positive reaction in 27 per cent., a negative reaction in 73 per cent.

Two facts may be drawn from these statistics, viz., that (1) in about one third of healthy individuals a positive reaction and (2) in about 12 per cent. of tubercular subjects a negative reaction is obtained.

According to Arloing it is just in advanced cases of tuberculosis where the serum fails to agglutinate. In addition there are other sources of error: serum from typhoid patients also agglutinates Arloing's homogeneous culture, whilst the reaction is negative in patients who are taking mercury.

It seems to me that the method of serum diagnosis of Arloing and Courmont is worthy of more extended investigation. I may only remark that Courmont has also tried the serous effusions of pleurisy and ascites and obtained in about 75 per cent. of clinically tubercular cases and in about 80 per cent. of doubtful cases a positive reaction. The cerebro-spinal fluid of tubercular meningitis always gave a negative reaction.

Tuberculin Injections.

No method supposed to aid the early diagnosis of tuberculosis has been so much discussed or written about, as the application of tuberculin injections. Whilst most ardently advocated by Koch [6] and his school, I think the majority of physicians and bacteriologists in this country have ceased to employ it. Before giving my opinion, I may just outline the method itself. It is the so-called " old tuberculin " of Koch which is used for it; this consists of a glycerin extract of six to eight weeks old T.B., grown in a meat extract to which 1 per cent. of pepsin and five per cent. of glycerin have been added. The liquid containing the cultivations is evaporated to $^1/_{10}$th of its original volume, then filtered through porcelain.

Some healthy individuals can bear injections of ·01 grm. of this extract without any ill consequences, but in individuals suspected of tuberculosis much smaller doses must be employed. A 1 per cent. solution is freshly prepared and ·1 grm., *i.e.*, $^1/_{10}$ or one partition of the subcutaneous syringe, which holds 1 grm. is injected, that is therefore 1 milligrm. of the tuberculin. The tem-

perature of the patient should have been found normal for two or three days preceding the injection. After injection the temperature is to be taken every two hours. Usually the temperature rises about twelve hours after the injection, a rise of ·5°C. is to be considered a positive reaction. If this takes place the injection is repeated in two or three days. If there is no reaction a second injection of 5 m.grm. is made in two or three days, and if this is without affect two or three days later a third of 10 m.grm., thus at Koch's Institute. B. Fraenkel[7] employs 3 m.gr. for a second and 6 m.grm. for a third dose. Spengler and Petruschky consider the initial dose too high and commence with $^1/_{10}$th m.gr. as a first, ½ to 1 m.gr. as a second dose. The "Reaction" is a general and a local one, general as far as it shows itself by a rise of temperature to 99°, 100°, or even to 104°F., with the usual symptoms accompanying feverishness. Local by cough, expectoration (now often for the first time showing T.B.), moist râles and increased dullness. This may appear as soon as five hours or only thirty-six hours after the injection. After three or four days the symptoms usually disappear.

In veterinary practice, as a protective measure against the dissemination of tuberculosis in cattle, tuberculin injections have proved of the highest importance. According to the statistics collected by Voges[8] in 7,327 published cases of injections in cattle the diagnosis was confirmed at the slaughter in all but 2·78 per cent., and it may well be assumed that in a number of the latter smaller tubercular foci had existed which escaped attention.

Are we then justified in employing this method in man? Two questions have here to be considered: (1) are tuberculin injections even in the smallest doses without danger to the patient? (2) does the so-called reaction which, of course, should be of as moderate degree as possible, help us in our diagnosis?

As regards 1, on the whole, if the precautions advocated by Koch are followed, *i.e.*, the temperature of the patient having been carefully observed for two or three days and found normal and injections only made, when found normal, and if the dose employed for injection is rather that of Spengler, *i.e.*, $^1/_{10}$th m.gr. for the first, 1 m.gr. for the second, etc., the injections have proved harmless with few

exceptions. These exceptions arise when the smaller doses bring forth no reaction and are followed by increased doses. The dangerous symptoms, the onset of general miliary tuberculosis, which occasionally arose under the exhibition of the old tuberculin and which were said to have been due to the fact that this preparation still contained living T.B. may be avoided by using the T.R. of Koch, and by heating this to 60°C. before injection. Such heating, according to Wright, without interfering with the effects of the tuberculin kills any T.B. or other living micro-organisms which might be present, but the lighting up of an already latent focus is even hereby not entirely avoided.

The second point concerns the conclusion to be drawn from a positive reaction, and the same remarks hold also good in regard to the serum reaction before mentioned. A positive reaction indicates the probability of the presence of a tubercular focus somewhere in the body, but it tells us by no means that this focus is situated in the lung. An enquiry which was made in 1895 by the Germ. Imperial Health Office at the various pathological institutions of Germany gave the result that, apart from those who had died from manifest tuberculosis, every third or fourth body coming on the post-mortem table showed a still existing or healed tubercular focus. According to Nägeli[10] these statistics remain still far behind the facts, for he found in 284 post-mortems, conducted at the Zürich Pathol. Institute, with special attention to this point and a very careful examination as to tubercular foci, in 97 per cent. tubercular deposits of some sort; of the 278 in whom tubercular deposits were thus found, 63 had died from tuberculosis, 104 showed signs of active, 111 signs of latent, inactive or healed tuberculosis. Cornet[11] remarks with some justification that these numbers, as they only refer to the lowest and poorest strata of society, must not be accepted for the whole community. And indeed Birch-Hirschfeld,[12] in a paper to which I shall have to recur later on, gives the statistics of 826 obductions made in accident cases, covering all strata of society; of these 171 (20·7 per cent.), showed signs of pulmonal tuberculosis, the disease being latent and cicatrised in 105 (12·7 per cent.), in 31 cases (3·8 per cent.), the disease was advanced and in 35 cases it was in an early state.

Tuberculin injections, as well as the serum diagnosis will show a reaction wherever the tubercular focus be situated and whether it is latent or active. Only in those cases where after the injection of tuberculin a local reaction (in the form of râles, etc.) occurs does it speak for pulmonal tuberculosis—but is not such a reaction accompanied by danger? I am very much afraid it is.

Beck [13] gives the following as the results of his extensive investigations at Koch's Institute for Infectious Diseases at Berlin. Altogether, in the years 1891—7, 2,137 persons had received tuberculin injections, among these not only those in whom tuberculosis was suspected but convalescents from other diseases, *i.e.*, over 1,100 showed a positive reaction, and among these there were only 298 who showed clinical symptoms of phthisis.

A Fraenkel [14] injected tuberculin in 200 cases, of these 56 suffered manifestly from phthisis and 68 showed no symptoms of phthisis. Of the two hundred patients 167 = 83·5 per cent reacted to the injections. Among these were all the 56 phthisis cases; of the 76 suspected 70 reacted = 92 per cent., but of those who showed no symptoms suspicious of phthisis 37 = 56 per cent. reacted with a characteristic rise of temperature. Local symptoms arose only in 18 cases altogether, in the manifest or suspected phthisical patients.

A rise of temperature alone therefore after tuberculin injections does not prove the presence of pulmonal tuberculosis. The absence of all reaction even after larger injections on the other hand shows with the greatest probability the absence of even a latent tubercular focus.

The Opsonic Index as a Help to Diagnosis.

In 1903 it was observed by Wright and Douglas that the phagocytic power of the leucocyte, *i.e.*, its power of engulfing and destroying bacteria depended on a substance contained in the blood serum, that this substance combined with the microorganisms and prepared them for phagocytosis, hence the name opsonin, from opsono, to make ready for food. It was moreover found by Bullock and Western that the opsonins have a high degree of specificity, that a serum may, for instance, possess a

high opsonic power against staphylococci and a low one against tubercular infection. Leucocytes alone, separated from the serum, suspended in normal salt solution for instance, had no phagocytic power, and it was immaterial whether the leucocytes of a healthy or of an infected or immunised person were thus tested. Differently when leucocytes—from any source—and some pathogenic micro-organisms were brought together (*a*) in the serum of a healthy person, and (*b*) in the serum of an infected person and incubated, then it was found, that the leucocytes in *b* had taken up only a smaller number of micro-organisms than those in *a*. Thus at least in strictly localised bacterial infections. In subjects of systemic infection, and into this category it was soon found that pulmonary tuberculosis had to be reckoned, it was found that the opsonic power fluctuated from high to low.

To estimate the opsonic power present in the blood of a tubercular patient, we require (1) a suspension of leucocytes washed free from their plasma, (2) an emulsion of tubercle bacilli, (3) a few drops of serum from a healthy person, and (4) a few drops of serum from the patient.

We place measured quantities of 1, 2 and 3 in one capillary tube and equal quantities of 1, 2 and 4 in another and incubate at 37°C. for the same length of time. A film is made appropriately stained and microscopically examined; it is seen that many of the leucocytes have taken up tubercle bacilli, both are now counted, say that in the specimen with the normal serum it is found that 50 leucocytes have taken up 100 tubercle bacilli, and in that prepared with the serum from the patient 50 leucocytes have taken up only 50 bacilli, than the "opsonic index" of the latter is half of the normal, if they should have taken up 150 bacilli it would be as 150:100=1·5, if 200 it would be 2. Taking the average of as large a number, as possible, of tests and counts made with the serum of a healthy person as 1, it is found that the normal limits for other healthy individuals lie between 0·8 and 1·2.

It was found by Wright that the opsonins in the blood serum of a patient may be increased by subcutaneous injections of minute quantities of the dead micro-organisms of the same species at a time when the opsonic index is rising, *i.e.*, the so-called "positive

phase." In tuberculosis the T.R. of Koch is employed for this purpose.

Before considering the results of opsonin testing, which were obtained from patients under the care of some of my colleagues or myself at the Delamere Sanatorium through the observations and assiduity of Dr. Lloyd Smith and Mr. A. H. Crossley, it will be well to consider the conclusions of others in regard to the diagnostic value of opsonin testing. Taking only the most recent statements Ross [15] says that in acute pulmonary tuberculosis " the opsonic index may be high, or fluctuating from high to low, and Dr. Wright believes that this fluctuating opsonic power is due to repeated inoculation by the patient of bacterial products from his own focus of disease.

According to Calvert [16] the opsonic index is (1) in slight early cases above normal, (2) in acute cases fluctuating greatly from day to day, (3) in chronic cases below normal.

Prof. Wright and Reed[17] state that where the tuberculo-opsonic power is found normal or nearly normal, we are not warranted—while there are symptoms which suggest tuberculosis—in arriving at a positive or negative conclusion.

French[18] comes to the following conclusions: In doubtful cases an index below 0·7 or above 1·3 speaks in favour of tubercle. He further considers the following as a valuable diagnostic sign: that whilst after injecting T.R. into a healthy man the opsonic index falls slightly for about two days, then rises above normal and then returns to the normal, a similar injection into a tuberculous patient is followed by a considerable fall in the opsonic index, the latter remaining below what it originally was for a week or more, it then rises for two or three weeks above its former level. " This negative phase—after injection of tuberculin—is quite short in healthy people, long in tuberculous subjects, so that we have here an additional means of diagnosis, with larger doses of tuberculin than $^1/_{5000}$ m.g. the negative phase becomes more marked."

Taking these statements seriatim we find as Table I. shows that taking a single index in 23 cases of early pulmonary tuberculosis at Delamere the index was found normal, or nearly normal,

in 17; and thus we may infer that (1) we cannot base a diagnosis on a single observation.

Opsonic Indices.

A. *Twenty-three Cases with Pulmonary Tuberculosis of first degree.*

Name.	Index.	Remarks.
1. R. T.	1·9	—
2. G. D.	1·8	—
3. J. E.	1·7	—
4. T. S.	1·7	—
5. C. C.	1·5	Fistula
6. M. K.	1·4	—
7. W. U.	1·3	—
8. I. R.	1·3	—
9. H. D.	1·2	Larynx
10. H. G.	1·1	Larynx
11. R. B.	1·1	—
12. M. M.	1·0	—
13. P. S.	1·0	—
14. W. H.	1·0	—
15. J. A.	1·0	—
16. W. A.	1·0	—
17. H. J.	1·0	—
18. T. G.	1·0	Larynx
19. W. C.	0·9	Larynx
20. R. S.	0·8	—
21. J. W.	0·8	—
22. O. D.	0·8	—
23. H. E.	0·8	—

I was able to show before the Manchester Medical Society a number of charts, coming from early cases of pulmonary tuberculosis, in which (2) we find the indices persistently low, and (3) persistently high. Further after injections of tuberculin in small doses in tuberculous patients, when the observations were taken sufficiently frequent it was found that (4) the negative need last but a short time, or (5) there need be no negative phase at all, (6) there may even be a positive phase.

The conclusion we must therefore come to is that the opsonic index in phthisical patients (1) may be normal—as already stated above by Wright—or may be high or may be low, (2) that the indices may fluctuate, that (3) it fluctuates in fairly wide limits at different times of the day (not quite dependent on meals, rest

or exercise, as shown by some of our charts), that (4) after tuberculin injections there need be no long lasting negative phase, there may even be a positive phase.

Other Bacteriological or Laboratory Methods.

A few words will suffice to do justice to some other laboratory methods for the detection of tuberculosis not yet mentioned.

Examination of blood. First of all it might have occurred to many why not search for T.B. in the blood? Ewald, Ehrlich, Cantani, Hammerle and Mikulisz have, according to Ettlinger, examined the blood of 900 patients suffering from pulmonary tuberculosis without being able to find T.B. in a single case.

Several French authors have tried whether by centrifugalizing the blood better results may be obtained. Jousset, Besançon, Griffon and Philibert have sought for bacilli in the fibrin or the blood clot, which by diverse methods, viz., by the addition of pepsin, of caustic soda, etc., they dissolve, and then centrifugalise; Lesieur, Loeper and Lonste, Nattan-Larrier and Bergeron prevent the coagulation of blood—Lesieur by letting it be sucked from the patient by leeches—and then seek for bacilli. The results were either negative or doubtful, as other bacilli similar to T.B. might accidentally have got mixed up during the various manipulations.

Examination of pleuritic serum. As pleuritic effusion is frequently one of the earliest symptoms of pulmonary tuberculosis or is often in even non-suspected cases followed in a shorter or longer time by tuberculosis, the examination of pleuritic effusions for tubercle bacilli is important. The bacilli are usually only very sparingly to be found and the serum therefore should be centrifugalised and the sediment may then be microscopically examined, or used for inoculation in guinea pigs or the breast of suckling guinea pigs, or the serum may be examined as to its agglutinating influence on Arloing's *cultures homogènes*. Besançon and Griffon[19] advise making pure cultivations of the tubercle bacilli on a blood-jelly specially devised by them.

Clinical Methods of Examination.

From the preceding statements it is clear that the diagnosis of early pulmonary tuberculosis by laboratory methods alone is in

many cases impossible. We have, therefore, to rely in many instances on the older methods of examination of the chest by percussion and auscultation and the due consideration and valuation of other clinical signs.

We have to consider firstly the family history. Though congenital tuberculosis is undoubtedly rare, a hereditary predisposition can in many cases be made out. Sometimes of course what may apparently be hereditary predisposition may actually have been due to the same noxious influences under which all the members of one family may have lived or to direct infection.

We find in the cases at Bowdon and Delamere a family history in 35 per cent., among the better classes this is, no doubt, much smaller.

Infection of wife from the husband seems more frequent than the infection of the husband by the wife; on the other hand tuberculosis of the mother seems to be of greater danger than tuberculosis of the father for the children.

Though we see often enough pulmonary tuberculosis in persons with well formed thorax, the so-called paralytic thorax with its narrow antero-posterior diameter, its wide intercostal spaces, its scapulæ standing off like wings, its small respiratory excursions is at once suspicious of phthisis. It is said that it is the paralytic thorax which is inherited. According to Freund [20] it is due not only to insufficient development of the thoracic muscles, but to a shortening and rigidity with consecutive early ossification of the first costal cartilage; this again giving rise to a diminution in the space and the mobility of the upper part of the thorax, and to an obstruction and diminution of the bronchial ramifications providing the apices of the lung. The anomaly in the development of the first costal cartilage is, according to Freund, manifest already in the fœtus, so that indeed the phthisical habitus seems due to hereditary influence.

It would lead too far to mention all the other elements predisposing to tuberculosis: as unhealthy occupations, overcrowded dwellings, alcoholism, or previous illnesses, as bronchitis, pneumonia, pleurisy, in regard to which it often remains doubtful whether they were not ab origine of a tubercular nature. Measles, whooping-cough, influenza, typhoid, syphilis and

particularly diabetes are often followed by pulmonary tuberculosis. Rokitansky was the first to draw attention to the antagonism which exists between cardiac disease and pulmonary phthisis, later investigations have indeed shown that this antagonism is not complete. Traube [21] found in fact that a stenosis of the pulmonary ostium predisposes to phthisis, but whilst pulmonary tuberculosis may occasionally be seen in patients affected with aortic incompetence, mitral disease seems to afford an almost complete protection against tubercular invasion of the lung. This seems to be due to the passive hyperæmia of the lung in left-sided valvular disease, a hypothesis which is confirmed by the good results obtained by Bier of Bonn in tubercular joint disease by the artificial production of passive hyperæmia.

French authors, principally Pidoux [22] and Lemoine,[23] have drawn attention to the fact that gouty individuals seem less predisposed to phthisis, and that when they become affected, the tuberculosis tends to heal or runs a favourable course.

After giving due weight to the different points which we know influence the development of tuberculosis and I have only been able to mention a few of them, we must take into consideration the general symptoms which frequently mark the onset of this disease.

Anæmia and loss of flesh. Anæmia, loss of flesh, general lassitude, palpitation, loss of appetite, and digestive troubles, especially when associated with a short hacking cough, must always excite the suspicion of pulmonary tuberculosis.

Pulse. Special attention should be given to the pulse, this is often found frequent, especially after slight exertion or excitement, and even when the patient is at rest, the pulse may often be found at 100 to 120. According to Papillon [24] there is increased arterial tension, but Fraenkel and John [25] could not confirm this, and found with Gaertner's tonometer in early cases of phthisis the blood pressure normal, in advanced cases low.

Temperature. Of the greatest importance is the temperature. It should be taken three to four times daily for several days wherever there is a suspicion of phthisis. The rise is often small, 1°F. or little more, but when persistent is of the greatest significance. Penzoldt observed in some tubercular patients with

normal temperatures that this would rise after exertion, but anæmic and chlorotic patients, convalescents from acute diseases, and even many healthy persons show a rise of temperature after bodily exertion. On the other hand some cases of phthisis run their course without any rise of temperature at all, so that some writers go so far as to consider any considerable rise of temperature due to a mixed infection—with streptococci, etc.

Pain. Patients frequently complain about pain over the site, where the lung is diseased, or pain may be felt in the shoulder and be mistaken for rheumatism.

Dyspeptic symptoms are frequently present at an early stage of phthisis, they sometimes are so marked that gastric ulcer is feared or diagnosed, where really a pulmonary affection is present. In all cases of anæmia with gastric symptoms and specially with slight rises of temperature, the lungs should be most carefully examined, especially as the two conditions may co-exist. Gastric pain, or pain on pressure,may be present.

The dyspepsia may be due to diminished peristalsis. Klemperer [26] found this to be the case in almost all cases of early phthisis; there was usually at the same time hyperacidity. According to Marfan [27] disturbance of secretion is more frequent.

Vomiting usually takes place after a preceding attack of coughing, sometimes in the morning, more frequently in the evening.

Respiratory symptoms. The anomalies of nutrition, circulation and digestion just mentioned may precede any trouble from the respiratory organs for various periods, or they may come on together with them or follow them.

Cough. The cough is mostly dry and short. In regard to the absence of expectoration it is not wise to trust the patient's words. Often on more accurate enquiry one finds that a few sputa are brought up in the morning. I have already mentioned that a wet pack or a few doses of potassium iodide sometimes lead to expectoration, when this had before been absent.

Hæmoptysis. In a number of patients hæmoptysis is the first symptom which leads them to the physician. On enquiry one often finds that all or some of the before mentioned symptoms have been present for some time; occasionally the hæmoptysis follows some bodily exertion. The quantity of blood may not exceed a

teaspoonful or amount to a few tablespoonfuls or to be profuse and last for several days.

Hæmoptysis is usually followed by a rise of temperature, and when it has ceased, by distinct percussory and auscultatory signs of phthisis, but sometimes even after more profuse hæmoptysis all lung symptoms disappear again gradually. In our cases at Bowdon and Delamere we find hæmoptysis in 54 per cent.; it is always most suspicious of pulmonary tuberculosis, when hæmorrhagic infarct, bleeding form the nose, gums or palates, or the larynx which is very rarely the seat of hœmorrhage, can be excluded.

Dyspnœa of any marked degree is usually absent.

Pleurisy. It has already been mentioned that pleuritic exudation often precedes pulmonary tuberculosis. Sometimes years elapse between the clinical manifestation of the two. Not rarely small tubercular foci or tubercular glands which have been present without producing any symptoms are undoubtedly the cause of the pleuritic effusion. A. Fraenkel [28] is right in stating that every pleuritic exudation of slow development, in which a rheumatic diathesis, nephritis, tumors or other ætiological causes can be excluded points with the greatest probability to tuberculosis.

Pathological Anatomy of Early Pulmonary Tuberculosis.

To understand the percussory and auscultatory symptoms of early phthisis, a consideration of the pathological anatomy of early pulmonary tuberculosis is necessary, as the anatomical picture helps us to understand, nay even to construct, the physical signs which we may expect to find over the lung.

Occasions for seeing cases of early active pulmonary tuberculosis on the post-mortem table are rare. Excluding very rare cases of fatal hæmoptysis at an early stage, it can only be in accidents or in consequence of other acute diseases that we may find that the patient at the time of his death suffered from early active phthisis—in distinction from latent healed, encapsuled foci of old tubercular disease so often seen in the post-mortem table.

Birch-Hirschfeld,[29] the profesor of pathology at Leipsic, had the idea of most carefully examining the lungs of 800 cases

killed by accident or an acute disease, as to early tuberculosis. Among these he found 32 cases of early pulmonary phthisis. In 28 of the 32 cases the seat of the tubercular lesion was found situated in the wall of a medium sized bronchus, having developed from its mucous lining, and in 3 cases only the development of the tubercle seemed to have taken place from the interstitial tissue. Hirschfeld thus verified Virchow's statement that the favourite situation of early tubercular growths is the mucosa of the bronchi; only Virchow states that the small bronchi, whilst Hirschfeld that those of the third or fourth order are affected. He throws over entirely Rindfleisch's statement, that the terminal bronchioles at the point of transition into the infundibular passages are the favourite seat, proving that this holds good only for secondary and miliary tubercle, from the observation of which Rindfleisch generalised.

In almost all cases the posterior part of the apex of the lung was the seat of the affection. For the purpose of elucidating the conditions which favour the primary affection of this part of the lung, Birch-Hirschfeld studied the anatomy of the bronchial tree by means of metal injections into the bronchi, and found that the posterior part of the apex of the lung is the part worst provided for aeration, the ramifications of the bronchus apicalis posterior being compressed and rudimentary.

The primary lesions can best be found, if the lung, after being removed from the thorax, is palpated; it is then felt as a hard nodule, attaining the size of a hazel nut a little underneath the surface. If such a nodule is discovered, one must seek the larger bronchus providing the lobe in which the nodule is situated, and then gradually open out the bronchial ramifications from branch to branch, by means of a hollow probe and scissors, until one gets to the seat of the affection. Then preparations as those illustrated by Birch-Hirschfeld may be obtained.

The primary tuberculosis of the bronchial mucosa soon affects the submucous layer and first of all produces swelling of the mucous-membrane and a stenosis of the affected bronchus together with an atelectatic condition of the part of the lung provided by it. Later on the ulceration of the bronchial wall goes deeper and

deeper and thus an erosion of smaller peribronchial vessels may take place and give rise to what is clinically "early hæmoptysis." Hirschfeld has actually been able to illustrate such a lesion.

Symptoms on Percussion and Auscultation.

After these few observations on the pathological conditions let us consider what physical signs corresponding to them we may expect to find.

The atelectasis and obstruction of the bronchus leading to the upper posterior part of the apex ought to show itself, if extensive enough, as a dullness on percussion or as diminished breathsound. If we see the patient at an early stage—before the bronchus is entirely obliterated—a few deep inspirations may again inflate the partially collapsed lung tissue and the physical signs on percussion, and auscultation may temporarily disappear. And this is what I have been able to observe in a number of cases. I am constantly, wherever there is a suspicion of phthisis and also in others, as for instance in life insurance cases, on the look-out for this symptom, and I have thus adopted a different method of examination to that usually carried out, viz., the following: I inspect the thorax to note any abnormalities in form, etc., but I do not ask the patient to breathe deeply. I then let the patient sit down on a chair with his back towards me and now I percuss carefully the apices of the lung, defining exactly the line where the dull sound of the neck goes over into the full sound of the lung. I use finger on finger percussion, placing my finger parallel to the line expected to be found obliquely over the neck and do not percuss too strongly. Usually the mistake is made to place the finger at right angle to the vertebral column, but as the region adjoining the vertebral column always gives a dull sound, the finger is then partly over a dull and partly over a resounding area, and the result is faulty. The lines anteriorly and posteriorly run as illustrated in the accompanying figures.

Any affection of the apex, any atelectasis or infiltration exceeding the most moderate size will show itself as a diminished resonance, or as a dullness on percussion, frequently the line on the affected side stands deeper than on the not affected side.

I then auscultate, always firstly over that apex where I found

diminished resonance and of which I am therefore suspicious. I let the patient breathe quietly at first, then deeper and deeper. I note whether there is a marked change in the quality of the breath sounds, and if both the in- and the expiration are at first almost inaudible, and then become harsh, or if the expiration becomes prolonged, we may consider the case as one either affected or threatened by tuberculosis, especially if there are any of the other symptoms of early phthisis before mentioned present.

Affection of Right Apex.

I have notes of 28 such cases and of their further history, and in 22 of these further symptoms of tuberculosis developed. In 8 of these 22 an examination of the sputum confirmed within 3 to 30 days the diagnosis; 6 were life insurance cases whom I saw a second time only in from 3 to 6 months, 4 of these had developed further signs of phthisis at the time of re-examination, 2 appeared healthy, so that only in 4 of those who came as patients, and with other signs suspicious of tuberculosis, further symptoms of phthisis did not appear.

Sometimes, in addition to impaired resonance on percussion, the sound is slightly tympanitic and on auscultation "rough breathing" may be heard: this may be faint or loud and is audible mostly during inspiration, rarely during expiration. An intensified form of this " rough breathing " is " cogwheel breathing " due, according to Sahli, to the catarrhal swelling of the mucous membrane or an increase of secretion which must be displaced to one side by the air current. This cogwheel breathing, I agree with Turban,[30] is only rarely heard over the apices but more frequently a little lower down. It must be distinguished from the coarser, saccadated breathing heard in weak or marasmic individuals through the jerky action of the intercostal muscles.

Roughened breathing, when heard at the apex, is a sign of apical catarrh which is always suspicious of phthisis.

Weak or diminished vesicular breathing, showing the diminished entrance of air in the vesicles, must also excite suspicion and is one of the earliest signs of phthisis, especially when accompanied by small crepitations.

As the breathsounds are usually louder over the right apex care must be exercised in diagnosing impaired breathing over the left side or louder breathing over the right. Sharpened vesicular breathing which, according to Gerhardt, is one of the earliest signs of commencing phthisis may be found, and should, especially when accompanied by prolonged inspiration, excite suspicion.

The abnormalities in the breath sounds may be heard during inspiration only, others also or only during expiration. As the solidification of the lung tissue progresses, it becomes a better conductor of sound and bronchial breathing, originating in the larger bronchi, is heard; there is then also distinct dullness on percussion and the disease is no more in an early but in a manifest condition. When moist râles become superadded, they show that breaking down of tissue is taking place, and we have to do with more advanced phthisis.

Occasionally, already at an early stage, a few moist râles or single dry crackles (Knacken) may be heard, most frequently at the end of the inspiration, they occasionally disappear temporarily when the patient is made to cough, and are, according to Turban, frequently only to be heard in the morning after prolonged rest,

Turban advises therefore this time preferentially for the examination of patients.

Finally it may be pointed out, that repeated examinations and prolonged observation may be necessary before a diagnosis can be made, and that, no doubt, to the great disappointment of patient as well as physician, this cannot always be arrived at in a single consultation.

Röntgen-ray Examination.

A help to the diagnosis of pulmonary tuberculosis may be obtained by an examination with the Röntgen-rays. Walsham and Orton [31] give the following as the characteristic signs. (1) The movement of the shadow of the diaphragm on the affected side is restricted. (2) One or both apices fail to light up on deep inspiration. (3) The diseased portion of the lung casts a dark shadow. (4) The heart in a large majority of the cases is smaller, and is placed more vertically in the chest. (5) Any alteration in the shape of the chest and the position of the ribs can be better determined.

Arnsperger,[32] Schellenberg and Scherer found only in 6 per cent of their cases the first sign, the diminished excursion of the diaphragm, which was first described by Francis Williams. Arnsperger ascribed it to pleuritic adhesions, which in early cases are frequently absent. He further draws attention to the fact that the shadows seen at the diseased apex during deep inspiration frequently become darker in place of lighting up. Pförringer and Bung [33] also dispute the value of Williams sign.

The second, third and fifth sign are undoubtedly of great diagnostic value.

To the smaller size of the heart in consumptives already Laennec drew attention, while later observers more or less contradicted his statement, thus Reuter who found in 179 cases of phthisis 72 with cardiac hypertrophy, and Hirsch [34] who found 44 per cent. with an enlarged heart. Bouchard and Balthazard [35] however state that in the first and second stage of phthisis the heart as a rule is smaller than normal and that this forms one of the predisposing elements to tuberculosis. In the third stage the heart becomes larger through the increased resistance in the pulmonary circulation.

Further improvements in the Röntgen-ray apparatus will probably within the next few years make this method of examination a still more valuable aid to our means of diagnosing or at least of confirming our diagnosis of early pulmonary tuberculosis.

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CERTAIN EFFECTS OF FEBRILE DISEASES UPON THE MYOCARDIUM.

Abstract of a Thesis presented for the degree of M.D. (Cantab.)

By Gordon Lambert, B.A., M.D. (Cantab.).

It has long been recognised that diseases associated with fever produce pathological changes in the myocardium and that two factors contribute to the morbid effects produced, viz.,

(1) The *materies morbi* of the disease.

(2) The high temperature.

Although it is impossible to dissociate completely the rôles played by these two factors in the causation of degenerative changes in the myocardium they are now believed to act as follows:—

The micro-organisms and toxins of acute specific diseases induce in the myocardium that degeneration first described by Virchow and known as parenchymatous (or granular) degeneration. It affects the myocardium chiefly by its effects upon

(*a*) The myocardium itself, the component cells of which become turbid and show the characteristic albuminous granules. The change is general, not localised, the whole heart becoming turbid and soft—the "softened heart" of Laennec and Louis.

(*b*) The gastro-intestinal tract, the functions of which are disordered. Appetite is lost, digestion and assimilation are rendered difficult. The blood supplied to the myocardium through the coronary arteries is, therefore, deficient in quality. Moreover it is vitiated by the presence of toxins.

(*c*) The nervous system. The cardio-inhibitory control exercised by the vagus and spinal accessory over the heart's rate of action is impaired—through damage to the cardiac centre or to the nerve fibres, as in the toxic neuritis induced by diphtheria.

The high temperature is due to increased katabolism occurring in the tissues, of which the excessive excretion of urea serves as an index. When absorption by the stomach and intestines is hindered owing to degeneration of their gland cells, the body

feeds upon itself, as in starvation. In febrile diseases, however, the control of the cerebral thermogenic centres over heat production and of the vaso-motor and secretory nerves over heat loss is, also, impaired. The temperature, therefore, rises as a result of heat produced in the exaggerated katabolism.

The rapidity of the heart's action is increased.

i. By the increased katabolism, for which an increased supply of oxygen is needed. In order that this may be furnished by the impure, vitiated blood, a very rapid circulation is necessary.

ii. By the high temperature, since heat accelerates the heart's action (for a time).

This acceleration involves shortening of the diastole, during which the heart rests and effects repair of its tissues. Thus the heart is disturbed in many ways: its metabolism and nutrition are disordered, its muscular power is diminished, the mechanisms regulating its frequency and rhythm of action have ceased to exercise their normal control.

The disability of the myocardium reveals itself by certain clinical signs of which the most common are:—

1. Weakness of the first sound, which becomes faint, distant or muffled. In prolonged cases of acute specific diseases, *e.g.* typhoid fever, the first sound may become inaudible.

2. Partial or complete replacement of the first sound by a systolic murmur. Two varieties of murmur may occur. (*a*) Hæmic—due to physical conditions which are imperfectly understood. (*b*) Regurgitant—indicating dilatation of the left ventricle. The murmur is conducted outwards and the pulmonary second sound is accentuated. In young, vigorous subjects, this murmur may be audible for a few days only, at the height of the fever. In old and weakly patients it has a graver significance and denotes the onset of cardiac failure, which generally progresses to a fatal issue, the right heart becoming involved by back pressure.

3. *Irregularity* in time and force of heart and pulse beats and *intermissions*. These afford evidence of impaired nervous control and of relative or absolute weakness of the myocardium. They may occur early or late in the course of an acute febrile disease. We know that even a normal, healthy ventricle does not invariably discharge its full contents at each beat into the aorta; but its

distension is kept within limits, *because it has the power of executing contractions of which the force is proportioned to the degree of its distension.* A heart enfeebled by disease, however, loses this property in greater or less degree. Irregularity or intermittence of its action, therefore, warns us that the expulsion of its contents is becoming incomplete and that progressive dilatation may ensue.

The clinical signs above mentioned occur during the course of acute febrile diseases. Certain sequential effects of these diseases are, also, represented by clinical signs and the cases in which they occur may be placed in two groups:—

I. In medical practice it is not uncommon to meet patients who complain of "weakness" of the heart beginning after an attack of influenza or another acute febrile disease. Comparatively slight muscular exertion induces dyspnœa in these patients. On examination the impulse of the heart is found to be very weak or not palpable. The first sound closely resembles the second sound in both duration and character. The cause of the heart's impulse is the hardening of the stationary portion of the left ventricle in contact with the chest wall transmitted to the finger. The first sound consists of two component elements, a muscular and a valvular element: the second sound has a valvular element only. It follows that both the weakness of the impulse and the alteration in the first sound indicate impaired muscular power of the myocardium. With our present methods it is most difficult to ascertain the pathological changes underlying this impairment of power. It is obvious, however, that recovery of the myocardium has been incomplete and its "weakness" may depend upon exhaustion of the inherited vital energy and possibly atrophy of its cells, which the blood supply has failed to recuperate, or to fatty or fibrous changes.

II. Less numerous are cases in which symptoms of cardiac failure have appeared during convalescence and have recurred at intervals. Cardiac dyspnœa and oppression over the præcordium are complained of, the apex beat is displaced outwards, epigastric pulsation is present, percussion dulness to right of sternum is increased, a systolic murmur may be heard. Improvement takes place under treatment, but the symptoms return from time to time.

Evidence of arterio-sclerosis is often detected. It seems probable that in these cases parenchymatous has progressed to fatty degeneration of the myocardium and that degeneration induced in the intima of the arteries has resulted in arterio-sclerosis. In this connection it is important to remember that the coronary arteries command the situation to a great extent in all morbid conditions of the heart—degeneration, hypertrophy, valvular lesions, etc. Fatty degeneration of the myocardium is especially prone to follow parenchymatous degeneration, if these vessels are the seat of the disease. In this group of cases the heart becomes dilated during the attacks of cardiac failure but is not hypertrophied: after recovery from an attack percussion dulness is not greater than the normal.

In diphtheria, although the temperature is often low, the toxins frequently induce degenerative changes (toxic neuritis) in the cardiac fibres of the vagus and spinal accessory nerves, in addition to degeneration of the myocardium. In cases of sudden fatal cardiac failure in this disease the paralysis of the heart is, perhaps, too often attributed solely to degeneration of the nerve fibres. The fact is overlooked that the heart's action depends primarily on *the inherent power of spontaneous movement possessed by the incompletely differentiated protoplasm* of which the myocardium consists. The early embryonic heart and the severed mammalian ventricles beat with a regular rhythm in the absence of control by cardio-inhibitory nerves. The high mortality in these cases depends on the fact that the controlling action of the nervous centres is withdrawn not from a sound myocardium capable of efficient, regular contractions, but from a myocardium enfeebled by degenerative changes. It is true that in the final stages of over-distension the channel for an impulse along the depressor to the vaso-motor centre is blocked and in consequence the vaso-constrictor fibres are not inhibited. The distension, however, arises from weakness of the myocardium. In these (and all other) cases of dilatation of the heart comes into operation the law that "*the strain upon the walls of a sphere or spheroid increases with its circumference, and, therefore, the resistance to the contraction of the heart walls is increased whenever it becomes dilated.*" (Roy and Adami).

CHRONICLE.

Medicine.

KNAPP (B.). **The value of Glycerine as a Food.** *Deutsch. Arch. f. klin. Med.*, 1906, 87, p. 340.

THE food value of glycerin has been much discussed and disputed, but is now no longer denied. Knapp endeavours to show that glycerin does serve as an economiser of proteid, and that the addition of glycerin to an adequate proteid diet diminishes the output of N. He also gives the results of a similar experiment of Lüthje's, who found that the addition of glycerin to an inadequate proteid diet lessened the daily loss of N from the body.

Dogs were employed in the experiments, and were fed upon constant quantities of meat for periods of from 4 to 8 days; periods during which only meat was given alternated with periods during which definite quantities of glucose or glycerin, as the case might be, were added to the meat diet. The daily input of N was measured, and so was the daily loss of N in the urine and fæces. Three dogs were used, and the three experiments continued for 54, 33, and 60 days. Up to 150 grams of glycerin, largely diluted with water, were taken by the animals; occasionally a slight diarrhœa resulted, but this could be checked by small doses of tannalbin. Knapp explains the various results obtained by earlier experimenters as due to the fact that their experiments were not extensive enough. During the first few days in which glycerin is added to a meat diet, the N-excretion undoubtedly increases, as if there was a toxic protein decomposition. But Knapp, and also Lüthje, show that this increase is due solely to the washing out of nitrogenous substances from the tissues, and argue that long-continued experiments are essential in determining the food-value of glycerin. Knapp thinks that glycerin has about the same nutritive value as an equal weight of glucose, speaking roughly. A. J. JEX-BLAKE.

Four papers on the size and position of the normal Heart.

DIETLEN (H.). *Deutsch. Arch. f. klin. Med.*, 1906, 88, p. 55.
DIETLEN (H.). *Ibid.*, p. 286.
SIMONS (A.). *Ibid.*, p. 246.
MORITZ (F.). *Ibid.*, p. 277.

IN his first paper, Dietlen records the variations observed in the size and position of the heart in adolescents and adults of different heights. The measurements were made in two ways—firstly, by percussion;

secondly, by the *x*-ray silhoutte, an "orthodiagram" being taken in the manner described by Moritz. One hundred and eighty-seven males and 74 females, all free from cardiac or severe skeletal disease, were thus examined ,and 23 different observations and measurements were made in each case. The paper extends to 67 pages, and cannot be adequately summarised in a brief abstract. The author concludes that the size of the heart varies to a certain extent with the height of the body, tall men having larger hearts than short men of the same weight, or than adolescents of the same height, or than women of the same height. But the weight of the body is a much more powerful factor; *cæteris paribus*, heavy persons have larger hearts than lighter persons. He remarks that the mamillary line is placed from 8 to 13 cm. from the mid-line in men, and that its position bears no fixed relation to the height or weight, arguing that to state the relation of the apex beat or cardiac dulness to the mamillary line gives no information of value. The size of the heart increases with age—say, after 50 (Geist)—probably from hypertrophy of the left ventricle. Diagrams are given showing how greatly the position of the heart in the thorax varies with the position of the diaphragm. The apex beat was palpable in only 56 per cent. of the adults examined, and rather less often so in the females than in the males; it sinks, with the diaphragm, in old age; it generally is felt in the intercostal space above that in which the *x*-rays show the rounded apex of the heart, and Dietlen believes it is due almost entirely to the right ventricle. Numerous diagrams are given showing the various degrees of obliquity taken by the heart in thoraxes of different shapes, and the influence of tight lacing; it often lies more on the left side in women than in men, and more horizontally.

Dietlen's second paper deals with the percussion of the true limits of the heart, and is illustrated by 272 diagrams showing how the areas of cardiac dulness obtained by ordinary percussion or by Goldscheider's "liminal" percussion compare with the *x*-ray silhouettes of the heart, or ortho-diagrams, yielded by the patients. In percussion, the author places the left middle finger (or little finger) firmly against the chest wall, striking it with the right middle finger; both light and heavy percussion were employed, generally the former. Eight separate points round the cardiac circumference were thus fixed; then the *x*-ray ortho-diagram was made, and was regarded as authoritative. Dietlen found that the total error of percussion, determined by the differences between the cardiac areas estimated in these two ways, averaged 1·9 cm. in children, 3·2 cm. in women, and 3·5 cm. in men per set of eight measurements. He learned liminal percussion from Goldscheider, but thinks that ordinary percussion is less difficult and more trustworthy than Goldscheider's percussion, and discusses the different difficulties and sources of error met with in the percussion of the different portions of the heart's dulness.

Simons has tried the value of Goldscheider's method of percussion on the cadaver, investigating the accuracy of his results by autopsy. Goldscheider's "threshold value" or "liminal" percussion is no more than percussion done so very lightly that the sound produced lies at the

extreme limit of audibility. Light percussion has, of course, been advised and employed by many an author since the days of Auenbrugger; Goldscheider further advises the use of sagittal percussion or "ortho-percussion." Various authors, particularly Ebstein (1901), have recommended "tactile" or "palpatory" percussion, *i.e.*, percussion in which attention is directed not to the sound, but to the sensations produced in the resting finger by the vibrations due to the percussion by the percussing finger. Simons finds that liminal percussion gives extremely accurate results in the thorax of the cadaver, and that its technique is admirably simple; he discusses its rationale at some length. He does not think that the orthodiagram affords so accurate a representation of the size of the heart as percussion; even in practised hands, there may be an error of $\frac{1}{2}$—1 cm. in any orthodiagram-determined point.

Moritz, under whom Dietlen works, gives a general discussion of the determination of the cardiac dulness by means of percussion. He points out the great confusion and the contradictions that exist in the very various areas ascribed, in different text-books, to the relative cardiac dulness. These variations are due to the differences in the technique of the percussion used in the determination of the heart's dulness; they show that this "relative dulness" has no absolute value for the determination of the actual size of the heart in any given patient. Moritz uses heavy percussion for determining the right-hand margin of cardiac dulness, and medium or light percussion for the left margin—which is less easy to define. He points out that the ortho-diagram is highly accurate, and that the results of determinations of the heart's dulness made on cadavers cannot be transferred directly to the living subject. He also points out that three very different methods of percussion—namely, Goldscheider's extremely light ortho-percussion, Ebstein's tactile percussion, and his own heavy and medium percussion—all appear to give results which are closely confirmed by ortho-diagrams.

A. J. Jex-Blake.

Holst (P. F.), Nicolaysen (L.), and Ustvedt (Y.). **The duration of life in Pulmonary Phthisis in Norway.** *Deutsch. Arch. f. klin. Med.*, 1907, 88, p. 325.

This important paper begins with numerous references to the literature in which the duration of life in phthisical patients has been dealt with. The authors sent out to all the physicians in Norway printed papers with questions to fill in with certain details about the phthisical patients they had treated in 1891—1900. Seventy-three physicians returned 2,293 papers—of which 288 were inadequately filled in. The authors comment on the difficulty of saying exactly when the pulmonary disease begins in phthisis, and exactly what should be reckoned its first clinical symptom; they say that there was definite clinical evidence of tuberculosis in the 2,005 remaining cases—905 men and 1,100 women—on which they base their statistics, and they arrange their figures in several ways so as to bring out special points in the prognosis of

phthisis. Their results cannot be reproduced in detail; but it may be noted that the prognosis is much the same for men and for women, and that half the patients had died about 3¼ years after the appearance of the first definite symptom of phthisis. At the end of the year 20 per cent. had died; of two years, 40 per cent.; of four years, 55 per cent.; of five years, 60 per cent.; of seven years 70 per cent.; of ten years, 83 per cent. The material for these figures was derived mainly from country practitioners. As regards the power of doing work, the authors note that out of 2,002 cases followed for four years, 1,094 had died and 908 were living, and 52 per cent. of the living were still able to work; out of 1,658 followed for nine years, 322 were still alive, and 67 per cent. of them were still able to work.

A. J. Jex-Blake.

Meyer (E.) and Heineke (A.). **Blood-formation in severe Anæmia and Leucæmia.** *Deutsch. Arch. f. klin. Med.*, 1907, 88, p. 435.

The authors describe and detail and discuss 20 cases of severe anæmia and leucæmia, giving the results of obduction also. They conclude that the changes seen in the organs (liver, spleen, etc.) in myeloid leucæmia are due to passive crowding with leucocytes, whereas in lymphatic leucæmia the lymphadenoid tissue as a whole tends to proliferate. The myeloid accumulations found in the spleen are not due to growth of the cells of the splenic follicles, but arise from undifferentiated pulp-cells; these myeloid masses are found in the spleen almost regularly in pernicious anæmia, and often in the liver. The spleen and liver in anæmia often develop extra- and intra-vascular areas for making, probably, white and red blood-cells as obtains in the embryo. Similar myeloid accumulations may be seen in the embryonic liver and spleen; appearing in an anæmia, these changes represent compensatory processes, and the authors argue that the *primum movens* of pernicious anæmia cannot be a megaloblastic degeneration of the bone-marrow. They hold that the high colour-index of pernicious anæmia depends upon the presence of young red cells in the circulation, as embryonic red cells contain more hæmoglobin than do those of the adult; it falls when this new production of red cells fails; when a rapid production of red cells takes place, it often happens that the myeloid tissue also produces white cells, so that a myeloid leucæmia is simulated—or the picture of a leucanæmia. Cases of severe sepsis may produce a blood exactly like that of pernicious anæmia. And the complete picture of the myeloid changes in the liver and spleen can be produced in rabbits by the use of blood-poisons (pyrogallol, phenylhydrazine, etc.), and is evidence of an attempt to restore the blood to the normal. Twenty coloured plates are given.

A. J. Jex-Blake.

Six papers dealing with Stokes-Adams' Disease.

LICHTHEIM. *Deutsch. Arch. f. klin. Med.*, 1905, 85, p. 360.
JOACHIM (G.). *Ibid.*, 1905, 85, p. 373.
LEUCHTWEIS (W.). *Ibid.*, 1906, 86, p. 456.
FINKELNBURG (R.). *Ibid.*, 1906, 86, p. 463.
SCHMOLL (E.). *Ibid.*, 1906, 87, p. 554.
JOACHIM (G.). *Ibid.*, 1907, 88, 574.

PROF. LICHTHEIM records the case of a robust man of 50, who denied syphilis, but had had typhoid fever 25 years before, and since then had complained of slight rheumatic pains, and was an alcoholic subject. His pulse was 25, while the jugular vein beat 75 times to the minute; over the præcordia a systolic murmur could be heard, and no murmur occurred in diastole. The patient from time to time had fainting fits, lasting from a few seconds to 15 minutes. By the *x*-rays the heart was seen to be enlarged. At one time the auricular systoles could be heard by the stethoscope in this patient. Later, his pulse varied between 26 and 28, the venous pulse varying from 58 to 62. The blood-pressure was 160 mm. Hg. In general, the patient suffered more from chronic bronchitis than from his cardiac condition. The author discusses the pathology of the condition; 13 references to the literature, and sphygmographic tracings are given.

Joachim describes four cases of cardiac irregularity, in which he believes that the conduction of the stimulus to contract was impaired in the heart itself. In only one of these could Stokes-Adams' disease be suspected—the patient was 67 years old, had had syphilis at 24, and was suffering from aortic aneurysm and cardiac failure—and Joachim discusses the question whether the occasional extra venous pulsation observed (and registered by the sphygmograph) might not have been due to an isolated contraction of the right ventricle, while the left ventricle remained in diastole. He concludes that it was not. He endeavoured to obtain evidence of systoles of the left auricle by means of apparatus introduced into the œsophagus, but the technical difficulties met with were too great, and the attempt failed.

Leuchtweis's patient, a man of 40, who had never had syphilis, came under treatment on account of repeated fainting fits; he indulged largely in tobacco and alcohol. These attacks began when he was 33; a "hot feeling ran up from his heart to his brain," blackness came before his eyes, and he lost consciousness for a few seconds. He might have many of these attacks per diem, or none. His pulse was usually 30, and often fell to 25 a minute just before the fainting occurred. When Leuchtweis saw him, the patient had had a faint lasting an hour, during which time he lay as if dead. The heart was enlarged, and a systolic murmur was heard over the præcordia, best at the apex. Hard work seemed to increase the number of faints; sometimes an imminent attack could be averted by hard deep breathing. Curves are given showing that the right auricle beat 48—50, while the left ventricle beat 28—30 to the minute. Atropine did not quicken the ventricle, but

did slightly increase the auricular beats. The arterial blood-pressure was 130 mm. Hg. The extra auricular systoles could not be heard with the phonendoscope.

Finkelnburg's patient, a man of 55, had had a slow pulse and fainting fits for over three years; consciousness was lost for a short time, and convulsions were seen, and in one fit the pulse beat 16 to the minute. The man was prematurely aged; the heart was a little enlarged, and an apical systolic murmur could be heard. The veins in the neck beat three or four times as fast as the radial pulse; curves are given.

Schmoll describes two cases of heart-block. One patient, a man of 60, had never had syphilis, had not smoked for 40 years, and had never taken alcohol in excess. For two years he had been liable to short attacks of faintness, often 10 or 15 in the day, with loss of consciousness. They were mostly brought on by exertion; treatment for several months by rest and digitalis had brought no improvement. Schmoll found that pulse to be 28, falling to 14—16 a minute if the faints were frequent, and remaining so for hours or days together. The faints were preceded by pallor, and followed by flushing of the face; during the faints no pulse at all might be felt for 40—50 seconds. The blood-pressure was 220 mm. Hg.; the heart was much enlarged, and a loud systolic murmur best heard at the apex was present. The right auricle beat 23 to the left ventricle's 10. Schmoll found that atropine quickened up the auricle considerably, but left the ventricular contractions unchanged, and the auricular systoles made themselves seen by venous pulsation in the neck. Schmoll's second patient, a married woman of 66, who had never been seriously ill, had had frequent fainting fits with epileptiform convulsions for eight months only. They occurred without warning, and usually lasted only a few seconds; they were preceded by pallor and followed by flushing of the face. Signs of cardiac failure had appeared for the last four weeks, during which time bradycardia had been noted. The patient was thin, and her heart was much enlarged; when regular, the pulse beat 28—30 to the minute, but it was often irregular at 40 pulsations. In the neck, venous pulsation about three times as frequent could be seen. During a faint lasting twenty seconds the pulse and heart sounds disappeared, while the venous pulsation in the neck continued; then the patient sat up for ten seconds, stiff, with fixed dilated pupils, breathing deeply; then the face, previously pale, flushed, and the pulse returned, and in a few seconds the patient was conscious once more. The day after Schmoll saw her the patient died from heart failure. *Post-mortem*, the kidneys were found to be granular, and the left ventricle hypertrophied; to the naked eye the bundle of His showed no change. But under the microscope the bundle was found to be completely invested in fibrous tissue, and in places its muscle cells were completely replaced by fibrous tissue also. Schmoll concludes that absence of venous pulsation in cases of heart-block may be due to paralysis of the auricle. Eighteen references to the literature are given.

Joachim returns to the consideration of the case related above in

his previous paper, and adds three more cases in which conduction between auricle and ventricle was impaired. These cases do not fall under the heading of Stokes-Adams' disease, but exemplify true "cardiac arhythmia," and Joachim discusses the causation of this arhythmia and its connection with bradycardia, emphasising the importance of obtaining tracings from veins in such cases as well as tracings of arterial pulse waves.

A. J. Jex-Blake.

Edenhuizen (H.). **Polymyositis in acute Polyarthritis.** *Deutsch. Arch. f. klin. Med.*, 1906, 87, p. 14.

The authoress quotes the literature of acute polymyositis, which has been variously regarded as (1) an obscure spontaneous disease of the muscular system; (2) a disease of the muscles and the skin together, a dermatomyositis; (3) due to septicæmia; (4) a complication of polyarthritis. For example, Baer (1904) carefully distinguishes polymyositis from the muscular inflammations that may occur in polyarthritis; other writers have met with polymyositis after puerperal fever; Loewenfeld (1890) endeavoured to connect polymyositis with sclerodermia. Fränkel and others have recorded cases in which the myositis was part of a septicopyæmia, which was often streptococcal; finally, von Leube (1894) argued that the agent producing polymyositis was probably an attenuated variety of the microbe producing articular rheumatism.

Edenhuizen then records in full the case of a woman of 21, who had been in bed for six weeks at 19 with articular rheumatism, and who was taken into hospital on December 2nd, 1904, with a second attack of acute articular rheumatism; she was also seven months pregnant. She had fever (101·3°F.), and endocarditis. Two days later she had pain and tenderness in the glutei on the left side; by December 8th the swelling was as large as an apple. It was explored with a needle on the 13th, but no pus was found. On the 16th a tumour appeared in the teres major and latissimus dorsi in the right axilla. During this time the patient had not been free from articular pains; she had fever up to 102°, and 13,000 leucocytes per c.mm. On the 18th she gave birth to a seven months' child, that died immediately. On January 2nd, 1905, cultures were made from her blood, but without success; later a biopsy was performed on the inflamed muscle of the right teres major, and this showed leucocytic infiltration and some degeneration of the muscle-fibres. By January 9th the two muscle swellings had diminished considerably in size, but next day a hard tender swelling appeared in the adductors of the right thigh. Fever continued, and reached 104·2°F. on January 15th. Three weeks later the swelling in the thigh and the right gracilis was still tender; the patient was weak, listless, without appetite. During this time she had been treated generously with salicylates both by the mouth and intravenously; Bier's hot-air treatment had been applied locally. On March 8th the tumour in the gracilis was hot and fluctuating; it was

punctured, but pus was not found. The temperature became more regular, and was normal after April 10th; the heart-sounds were more nearly normal than on admission, and the patient went out cured on April 18th.

The spleen was not found to be enlarged at any time. The authoress concludes that the patient was suffering from multiple arthritis complicated with polymyositis and endocarditis, all, no doubt, due to a single microbe. She discusses the other similar or analogous cases found in the literature.

A. J. Jex-Blake.

Zografidi (S.). **Divers' Palsy.** *Rev. de Méd.*, 1907, p. 159.

The author describes the main features of this affection from his observation of 260 cases among the Greek divers on the African coast, and its morbid anatomy from the pathological examination of seven cases. He accepts Bert's theory of its causation, viz., that under increased atmospheric pressure air is dissolved by the blood in proportion to the pressure, according to Dalton's law. On sudden decompression the excess of air leaves solution in bubbles which form gaseous emboli in the vessels.

There are three recognised varieties, or rather degrees, of the affection:—

1. The fulminant form. After a prolonged stay under great pressure followed by too rapid ascent, the diver suddenly dies from generalised emphysema, hæmorrhages from the nose, eyes, ears and mouth, and diffuse capillary hæmorrhages under the skin. These cases are, unhappily, not rare, but they are rarely observed.

2. The acute form. Such a large proportion of the cases come under this class that it may be regarded as the type of the disease. The typical history is, that after having dived to a depth of 40 to 70 metres the diver comes to the surface complaining of pains throughout his whole body, numbness and weakness of his lower limbs, or if the attack be severe there may be loss of consciousness. In some cases the paraplegia disappears for a time after a few hours, but it almost invariably recurs. For the next few weeks there is complete paralysis and loss of sensation and of the reflexes of the lower limbs, and retention of urine and fæces. A band of hyperæsthesia may be found round the trunk corresponding to the level of the lesion. The temperature is generally raised, and cystitis, bedsores and other trophic troubles may develope, from which death results. Other cases in which the attack is less severe gradually pass into the stage of chronic spastic paraplegia, from which there is no recovery. Thirty-four per cent. of the Greek divers are finally affected by this form of the disease. Or the chief incidence of the affection may lie in the brain, and produce hemiplegia, aphasia or other cerebral symptoms.

3. The transient form. The diver comes to the surface complaining of pains, paræsthesiæ, paresis of his limbs, vertigo, etc., which soon pass off without leaving any sequelæ.

The morbid anatomy of the acute paraplegic form is regarded as a myelitis. The gaseous emboli in the vessels of the cord produce foci of anæmic softening and necrosis of the nervous tissue. The necrosing cells have a positive chemiotactic attraction for the leucocytes, which consequently invade and infiltrate the foci, giving the appearance of an inflammatory reaction. There is no evidence of bacterial infection of the cord, though bacterial infection from the intestinal canal may be a secondary factor. The early cerebral symptoms, as affection of vision, hearing or speech, vertigo and loss of consciousness are attributable to similar lesions in the brain. The initial pains are probably due to pressure on the sensory nerves by vessels dilated by gaseous emboli. The temporary disappearance of the paraplegia in many of the cases is explained by the absorption of the gaseous emboli, its return by the onset of secondary congestion and myelitic changes.

The central nervous systems of seven typical cases which died between the fifth and sixtieth day of the illness were examined histologically. In all cases the lesions were more or less diffuse, though the dorsal segments of the cord were generally the most affected. In the earliest stages there was intense congestion of the vessels of the cord and its meninges, perivascular leucocytal infiltration, slight proliferation of the neuroglial nuclei and frequently small hæmorrhages. Cavities and fissures filled with air were also present, and air-bubbles were found in the vessels of the brain and cord as late as the thirty-sixth day. In cases of longer duration there were irregularly distributed patches of softening and necrosis, corresponding to the occluded arteries, into which some leucocytal infiltration had occurred. On the absorption of the necrotic tissue empty spaces were left which were surrounded by proliferating neuroglia. The grey and white matter were equally affected by these changes.

GORDON HOLMES.

RAYMOND. **Some affections of the Peripheral Nerves.** *Gaz. des Hôpitaux*, 1907, p. 135.

THE lecture which is published here was devoted to the consideration of certain lesions of the peripheral nervous system; it was illustrated by cases.

The first case was a robust man, a bookbinder by trade, who, 18 months previously, began to suffer with tingling and numbness of the left little finger and ulnar side of his hand; various movements of this hand gradually became weak, and he came under observation with flattening of the thenar and hypothenar eminences and atrophy of their muscles. The movements that were palsied were, flexion of the proximal phalanges, extension of the distal, adduction and abduction of the fingers, adduction of the thumb and opposition of the little

finger. Electrical examination of the paralysed muscles gave the reaction of degeneration. But there was no sensory loss. As motor function were alone affected and sensation intact it might appear that the condition was not due to affection of the ulnar nerve which supplies all the muscles that were paralysed, but to disease of the motor fibres where they are anatomically dissociated from the sensory, for instance, in the ventral horns of the cord. The unilaterality of the lesion, its limited extent and the absence of fibrillary contractions dismiss this view. But as the sensory fibres of the ulnar nerve enter only its superficial branch, while the deep alone carries the motor, a neuritis localised in this branch can explain the symptoms; though such a limited neuritis is a rare condition. In this case its cause was undoubtedly compression of this branch of the nerve against the unciform bone in the course of his work.

In the second case the symptoms commenced with tingling in a little finger, followed by the gradual development of sensory loss and weakness in it, which afterwards spread to the ring and middle fingers. On examination there was found atrophy of the hypothenar and interosseal muscles, weakness of the interossei and ulnar lumbricals, of that part of the flexor profundus digitorum which goes to the ring and little fingers, of the flexor carpi ulnaris and of the adductor pollicis, but the extensor communis digitorum was intact. These are the muscles supplied by the ulnar nerve, and on examination sensory loss corresponding to the cutaneous distribution of this nerve was also found. As part of the flexor profundus digitorum was affected it was necessary to place the lesion in the upper part of the forearm, and on examination a tumour was found attached to the side of the nerve as it crossed the internal condyle. It was removed and found to be a detached synovial cyst.

The next two cases illustrate the rarer condition of ascending neuritis. A diabetic developed a whitlow in the middle finger of her right hand, from which inflammation spread up the hand and arm. During recovery the patient began to suffer with severe radiating pains, first in the affected finger, and later in the other fingers and up the arm to the shoulder. The pains came on in attacks associated with muscular spasm, and were not relieved by treatment. The muscles of the arm wasted. This is a typical case of ascending neuritis, which may be due to degeneration, inflammation, microbic infection or toxines extending proximalwards along the nerves. In this case there was also affection of all the joints of the limb, which was shown by the *x*-rays to consist of increase in size and osseous rarification of the epiphyses. The author regards it as a result of trophic disturbance due to the neuritis.

In another case a young man began to suffer with pains in a finger after an infection of it, so severe as to necessitate its amputation; the pain then extended up the forearm, and it was amputated; the arm was attacked, and the shoulder was finally disarticulated. Even this failed to relieve him, as the pain was then referred to the phantom limb, so finally the lower four dorsal cervical roots were cut, but this

proved no more successful than the previous surgical interventions. The seat of origin of the pain in such a case is not, according to the author, in the lower sensory neurones, but in the higher sensory centres in which the sensations are stored up; as a result of constant morbid excitation these perceptive centres may give rise to hallucinations of pain projected to the corresponding part of the body, that is, to the region from which the excitation first came. Medicinal treatment, such as baths, local applications and mild galvanic currents, may be successful in these cases in their earlier stages. Compression of the affected nerve-trunks, as recommended by Delorme, may have good effects.

That these cases may be complicated by a hysterical element is shown by the history of a girl who began to complain of severe pains in one of her fingers some time after it was injured, and from here the pains slowly spread up the arm to the shoulder and neck. Some relief was obtained by treatment, but the pain continued, accompanied by vaso-motor disturbance, though the movements of the hand became free and easy. It was then evident that there was an hysterical element superadded to the organic; the cure was completed by the suggestive treatment of a bath at Lourdes.

GORDON HOLMES.

TAYLOR (E. W.). **Tumour of the Spinal Cord leading to destruction of the lumbar region, hydrocephalus, double optic neuritis, and painless labour.** *Boston Med. and. Surg. Journ.*, 1907, p. 161.

THE essential features of the interesting case which is recorded here may be given in the words of the author's summary. A young woman was suddenly seized with radiating pains down both legs in September, while she was pregnant. The pain increased in intensity, and later extended into the bladder and rectal regions. In December the legs became weak, some hypoæsthesia was found below the knees, and difficulty in micturition supervened. A month later there was complete anæsthesia and loss of power of movement in the legs, with loss of the Faradic excitability of their muscles, and incontinence of urine and fæces and loss of all the reflexes of the lower limbs. There was also considerable mental aberration, and the patient suffered with severe headaches. Optic neuritis was also discovered; it developed rapidly, and soon led to blindness of one eye. About this time she was delivered normally and without pain of a healthy child at full term. It is interesting that labour was normal and not protracted, although the abdominal muscles, being paralysed, did not contract during the second stage. After this the mental symptoms, which consisted of excitement, incoherence, and vivid hallucinations of sight and hearing, became more pronounced. The pains disappeared with the onset of the complete paralysis and analgesia of the lower half of the body, but the headache persisted, and she complained of pain in her neck, especially on moving her head. She also complained of tingling in her arms for

some time before her death, but no disturbance or loss of power could be detected in them. Death occurred six months after the onset of the pain.

At the autopsy a tumour was found which infiltrated the roots of the cauda equina and extended upwards on the dorsal surface of the cord to the middle of the cervical enlargement. It invaded the cord only in the lumbo-sacral segments; in the dorsal and cervical it lay on the surface of the posterior columns between these and the pia mater, the latter being in no place penetrated by it. Its histological structure was that of a small round cell sarcoma. The only other abnormality, apart from the secondary tract degeneration which resulted from the destruction of the cord and its roots by the tumour, was a considerable amount of internal hydrocephalus.

The most interesting feature in this case was the presence of optic neuritis, though this has been repeatedly described in cases in which the upper segments of the cord have been involved or compressed by a tumour. The author believes that in his case it was secondary to the hydrocephalus, which in its turn was due to the occlusion of the spinal canal by the tumour. This led to a blocking of the cerebro-spinal fluid, which normally finds egress from the brain into the spinal subdural space.

GORDON HOLMES.

BROCKBANK (E. M.). **Merycism or Rumination in Man.** *Brit. Med. Journ.*, 1907.

BY merycism or rumination in man is meant the return of food from the stomach after completion of a meal in limited quantities to the mouth, where it is subjected to a second mastication before being re-swallowed, the whole process occupying about an hour as a rule, though the duration varies in different cases. It is analogous to the ruminating process in the ruminant group of mammals. It appears to the subjects of it to to be a perfectly natural process, and has nothing distasteful about it, the returned food tasting agreeably. It may either occur as a primary condition, when it is called physiological, or as secondary to some other condition when it is called pathological rumination. Though not common it is by no means rare if only histories of it can be obtained from subjects of rumination who do not think it worth while mentioning it to a medical man.

In this paper are given more or less lengthy notes of 21 cases, most of which are under the writer's observation, and which occur in three generations of one family. There is in addition a history of rumination in the two previous generations of the same family, though no notes of these latter cases are available. The notes of another case from an entirely different family, and written by the subject himself, is also given. The ages of the subjects referred to vary from 47 to 2 years. After recording the cases, the history, ætiology, pathology, mechanism and treatment of the condition are discussed somewhat extensively, and

a bibliography appended. It is the most exhaustive account of merycism in the English language, and in addition to the interest of the subject, the paper is notable for the number of new cases which are referred to in it.

E. B. Leech.

Cushny (A. R.) and Edmunds (C. W.). **Paroxysmal irregularity of the heart and auricular fibrillation.** *Amer. Journ. of Med. Sci.*, 1907.

The writers describe a patient who suffers from attacks of paroxysmal arrhythmia, with marked acceleration of the rate of the heart. They show that the irregularity is due to an irregular discharge of impulses and not to defects in the contraction of the ventricle which appeared to respond to the impulses received. The examination of the heart by the usual clinical methods gave no clue to the cause of the irregularity. No enlargement of the cardiac dulness could be made out, there were no murmurs, and no objective signs of cardiac failure apart from the irregularity were present.

A similar form of irregularity in the dog's heart is described, and it is shown that this is due to the dog's ventricle receiving irregular stimuli from the auricle which is in the state of fibrillation. This form of arrhythmia is shown to occur in the dogs occasionally from peripheral irritation, and it is probable that this gives rise to reflex inhibition of the vagus centre, which, acting on an abnormal heart, causes auricular fibrillation. The suggestion is made that in the patient described and in other cases of paroxysmal arrhythmia the condition is due to auricular fibrillation from the inhibition of the vagus centre.

John Hay.

Sears (G. G.). **Accidents following Thoracentesis: Pneumothorax; Sudden Death from Exploratory Puncture.** *Amer. Journ. of Med. Sci.*, 1906, p. 850.

The accidents that may occur comprise pleuritic urticaria, albuminous expectoration, sudden death and pneumothorax. The author considers the last two. He reports one case of sudden death, where, on introduction of the needle in a case of pleuritic effusion, death immediately occurred. Russell arrived at the conclusion that it is probably the conveyance of stimuli *via* the pulmonary branches of the vagus that cause syncopal symptoms, but the author does not think that in his case the needle could have penetrated the lung. Four cases of pneumothorax following paracentesis are reported. The explanation of this accident differs in different cases. In some cases it appears to be due to an unguarded needle, in others it has followed accidental reversal of the aspirating pump, but the majority of cases appear to be due to the wounding of the lung substance. Death rarely follows. The author advises that rapidity of evacuation should be avoided, especially in chronic cases, in order to give the lung time to expand, and he recommends siphonage as safer than aspiration.

E. N. Cunliffe.

Cobb (F.). **Acute Hæmatogenous Infection of one Kidney in persons apparently well. Report of a case and a study of the subject.** *Boston Med. and Surg. Journ.*, 1907.

Hæmatogenous infection of the kidney may be due to actual bits of infected tissue being carried to the kidney or may be caused by micro-organisms themselves, which for some reason are arrested in the kidney vessels. The latter class of case is considered by the author. It may occur in septic conditions or in general infectious diseases, as typhoid, scarlet fever and measles, or may rarely be met with in persons previously in apparent perfect health. The infection in such cases usually involves only one kidney, usually the right one, and there is reason to believe, from experimental work, that the healthy kidney not infrequently excretes bacteria circulating in the blood, and that for infection to occur there must be some local injury or disturbance in the kidney substance itself. As regards the bacteriology of these infections, the colon bacillus has been most frequently found, and the author believes that entry may take place into the blood either from the intestine or from the bladder, prostate, uterus or annexæ. The symptoms presented in these cases are frequently indistinguishable from those of acute appendicitis or acute cholecystitis, though the presence of albumen, pus and blood in the urine may suggest a renal origin. There is a high leucocytic count, a raised temperature and pulse-rate, and the pain may be referred to the appendicular or hepatic region. The treatment is operative with nephrectomy or drainage according to the extent of the mischief.

E. N. Cunliffe.

Labbé (M. M.). **Pernicious Anæmia of Syphilitic Origin.** *La Presse Médicale*, December 29, 1906.

The author refers to several cases reported by other observers where pernicious anæmia has occurred in syphilitics, and where the temporary improvement under anti-syphilitic treatment pointed to a causal relationship. One of the more convincing cases referred to is that of pernicious anæmia developing in a girl of 22 years old in the course of the secondary stage, where temporary improvement took place under anti-syphilitic treatment. After giving details of a case observed by him in his own practice, the author states his opinion that syphilis is probably not infrequently a cause of pernicious anæmia, and that in cases where a history of syphilis is obtained mercurial inunctions should be instituted, and may be expected to cause considerable improvement in the anæmia.

E. N. Cunliffe.

Gilbert (A.) and Lerebouillet (P.). **Pancreatic Diabetes due to auto-infection.** *Rev. de Méd.*, November, 1906.

The authors, as a result of numerous observations, believe that diabetes is due to a sclerosis of the pancreas affecting the intra- and inter-acinous structures, and usually, but not constantly, involving the islands of Langerhans. The cause of this sclerosis they believe to be an ascending infection of the pancreatic duct. In many of these cases there is a tendency to auto-infection of the several ducts of the digestive system, as exhibited in the family or personal history. The effect of the pancreatic sclerosis is to cause an increase of function on the part of the liver, and the authors instance in support of this opinion the hepatic enlargement and pain that they have observed in such cases, and hold that experimental and pathological findings are in accordance with their view.

E. N. Cunliffe.

Vouters (M. L.). **Symptomatology of Pyloric Cancer.** *Gaz. des Hôpitaux*, November 17, 1906.

A full and detailed account is given of the symptoms, physical signs, and progress of cancer of the pylorus. The author thinks that in early cases the most important symptoms are loss of appetite, especially for meat and fat, and the vomiting of watery fluid. He also points out the importance of examining the stools for "occult hæmorrhage." A full resumé is given of the various methods of examination employed during the stage of dilatation. Attention is drawn to Sick's recent work to the effect that the Oppler-Boas bacillus is not in itself evidence of cancer, but if lactic acid be also present it becomes a very valuable sign. A special description is given of tetany and dyspeptic coma occurring in the terminal stage. Many authorities are referred to throughout the paper, and a really valuable summary of our present knowledge of this important disease is presented by the author.

E. N. Cunliffe.

Martin (M. A.). **Hydatid Cysts of the Spleen.** *Gaz. des Hôpitaux*, October 27, 1906.

The mode of entrance of the parasites is probably from the alimentary canal *via* the splenic vein. The cysts may be single or multiple, they may be situated deep in the substance of the organ or at the surface, and in some cases have a pedicle. The cysts may develope anteriorly, posteriorly, superiorly or inferiorly, the latter being the most frequent. The symptoms vary according to the position of the cyst, but in all cases there is a tendency for attacks of pain to be noted, sometimes resembling gastric crises, and a sign of considerable value is inability to rest in the left lateral decubitus. Referred pains in the left shoulder are not infrequent. In many cases symptoms are

entirely absent and palpation of the abdomen for some reason or other alone reveals the trouble. Where the cyst developes in front gastric symptoms usually arise; where above, dyspnœa and chest symptoms; where below, intestinal symptoms; but where growing backwards no special symptoms arise, as the pancreatic function is not interfered with. As regards the physical signs, fluctuation is a most valuable sign, but is often absent, and the hydatid thrill is even more rare with splenic cysts than with hepatic cysts. The diagnosis is frequently impossible. If growing upwards the tumour is liable to be mistaken for left pleuritic effusion, but in this affection the patient usually prefers to lie on the left side, whilst in hydatids of the spleen this position is not possible. Another aid in diagnosis is the occurrence of eosinophilia. The author also considers the treatment. A full bibliography is given.

E. N. Cunliffe.

Englebach (W.) and Brown (O. H.). **Polycythæmia.** *Journ. Amer. Med. Assoc.*, October 20, 1906

The authors give a detailed account of a case of polycythæmia and a full resumé of the subject. The symptom-complex consists of chronic cyanosis, enlarged spleen and increased number of erythrocytes occurring in the absence of any conditions, such as heart and lung disease, that are known to cause these symptoms. The pathogenesis of this syndrome is obscure. In the earliest cases described tuberculosis of the spleen was found, but most of the later cases have not shown these changes, and the generally accepted view is that the syndrome depends on a primary hyperplastic affection of the erythroblastic myeloid tissue.

E. N. Cunliffe.

Steele (J. D.) **The Nucleus Test in Pancreatic Disease.** *Univer. of Penns. Bull.*, 1906, p, 237.

Schmidt's so-called nucleus test in pancreatic disease consists in passing small pieces of meat through the gastro-intestinal tract and examining them for nuclei. He believes that the nuclei are dissolved solely by the pancreatic ferment and that non-digestion of the nuclei indicates a complete lesion of the pancreas. Steele has attempted to verify this test both clinically and experimentally in animals, and arrives at the conclusion that although the nucleus test is probably a rough indication of the presence or absence of pancreatic secretion, yet the action is not specific, and the persistence of nuclei may be the result of general lowering of all digestive power quite as much as a sign of insufficiency of the pancreas alone.

E. N. Cunliffe.

Roth (A. H.). **The influence of x-rays in the treatment of Leukemia and Hodgkin's Disease, with a report of two cases.** *Journ. Amer. Med. Assoc.*, October 20, 1906.

The author arrived at the following conclusions:—

1. That in Hodgkin's disease beneficial value is to be expected. In his case decrease in glandular enlargement and alleviation of pressure symptoms took place. To prevent relapse *x*-ray treatment should be persisted in.

2. That is spleno-medullary leucocythæmia improvement is slower in exhibiting itself, and the use of arsenic is a useful adjuvant.

3. The immediate effect of *x*-ray treatment is to increase the number of leucocytes in the general circulation. This increase is accompanied by a large increase in the number of degenerate cells, most of them degenerate myelocytes.

E. N. Cunliffe.

Einhorn (M.). **Remarks on Banti's Disease (splenomegalia and cirrhosis of the liver).** *Med. Record*, September 1, 1906.

Caillaud (M.). **Banti's Disease.** *La Presse Médicale*, September, 1 1906.

The characteristic features of Banti's disease consist in the combination of spleno-megalia, anæmia, cirrhosis of the liver, and finally ascites. Banti, in his original description, describes three stages. The pre-ascitic stage is characterised by anæmia, splenic enlargement, increasing weakness and sometimes epistaxis, and lasts from one to four and a half years. Banti is convinced that swelling of the spleen precedes the anæmia. In this stage the liver and urine are normal. The second or transitional stage is short, lasting only a few months, and its chief features are diminution in the amount of urine and the occurrence of dyspeptic symptoms. The third stage begins with abdominal distension, and ascites slowly developes. The liver dulness is decreased, the urine is diminished, and contains urobilin, but no bile pigments. The anæmia increases, the skin darkens and the conjunctivæ show a somewhat icteric tinge, and death occurs from exhaustion or some intercurrent disease usually in a few months, at the highest seven or eight. Banti assumes the spleen to be the original seat of the disease. Senator later studied the subject, and included in the disease cases of splenic pseudoleukæmia. He laid stress on the hæmorrhagic diathesis exhibited, especially in the form of gastric and intestinal bleeding. Senator suggested that auto-intoxication from the alimentary canal was the probable cause of the disease, and pointed out that diarrhœa frequently preceded the splenic enlargement. Senator believed that the ascites was occasionally absorbed, thus differing from Banti, who held that the ascites was never absorbed, and reappeared rapidly after tapping. Other authors have published cases that correspond to Banti's original description, and Osler pointed out the frequency of gastric and intestinal hæmorrhage in splenic anæmia.

Einhorn, in the first of the papers under review, mentions eighteen cases occurring in his own practice (fourteen during the last six years), all of which he classes under the heading of Banti's disease. He divides them into three groups:—(1) Pure form: spleno-megalia, anæmia, cirrhosis of the liver, ascites; (2) hæmorrhagic form: symptoms as above, but gastric and intestinal hæmorrhages present; (3) spleno-megalia, enlargement of the liver, anæmia, sometimes associated with grave gastric symptoms. He gives details of a few of his cases, and it is difficult from his description to avoid arriving at the conclusion that cases of alcoholic cirrhosis of the liver have been included by the author as examples of Banti's disease because enlargement of the spleen, ascites and gastric hæmorrhages happen to be present. The inclusion of such cases is greatly to be deprecated. Before a case can be properly classified as one of Banti's disease proof should be obtained that the characteristic symptoms have appeared in the order given by Banti in his original description, that is, there must be a clear history of anæmia and splenic enlargement preceding the development of cirrhosis of the liver and ascites.

In the second paper Caillaud gives a full detailed account of the clinical and pathological appearances found in an undoubted case of Banti's disease. Enlargement of the spleen and anæmia preceded the development of cirrhosis by ten years. The author draws special attention to the early occurrence of troublesome diarrhœa and to the fact that splenectomy prolonged for a short time the life of the patient, though performed too late to be thoroughly successful.

E. N. Cunliffe.

Preble (R. B.). **Insufficiency of the Tricuspid Valve in the course of Pernicious Anæmia.** *Amer. Journ. of Med. Sci.*, 1906, p. 393.

Relative insufficiency of the mitral valve in pernicious anæmia is recognised as frequently occurring. The author is inclined to believe that a similar condition is met with even greater frequency at the tricuspid valve. He believes that the physical signs differ from those occurring in tricuspid incompetence secondary to mitral lesions. In the latter marked cyanosis, dyspnœa, passive congestion of the liver, œdema of the legs and often of the body cavities is present, but in the former frequently the only sign of the condition is a systolic, venous pulse in the external jugulars. The author mentions that Leube has recorded the same clinical differences as occurring in relative tricuspid insufficiency in the course of chlorosis.

E. N. Cunliffe.

Blum (L.). **The diagnostic significance of ulceration of the throat in Typhoid Fever.** *Muench. med. Woch.*, 1906, p. 2292.

Dr. Blum describes the occurrence in typhoid fever, especially about the anterior pillars of the fauces or the neighbouring parts, of flat oval ulcers with slightly raised, and at first reddened edges, the base being

yellowish or greyish-yellow, without exudation or formation of membrane, and bleeding readily when swabbed. Usually they are bilateral, but they may be single or multiple. They appear most frequently during the second week of the attack, and heal with greater or less rapidity according to the severity of the disease, though the occurrence of the ulcerations shows no relation to the severity of the attack of typhoid fever, and may be noted even in quite mild cases.

As regards their etiology, it has been suggested (1) that they are of the nature of pressure sores; (2) that they are specific infections with the typhoid bacillus; and (3) that they are due to a secondary infection.

Some observers have expressed the opinion that they are pathognomonic of typhoid fever, but this can hardly be maintained in view of the two cases reported in detail by Dr. Blum, both of the patients suffering from tuberculosis, and showing no evidence of the former disease.

R. W. Marsden.

Meyerstein (W.). **The early diagnosis of Typhoid Fever.** *Muench. med. Woch.*, 1906. p. 2148.

Meyerstein finds that to aid in the cultivation of typhoid bacilli from the blood of patients with typhoid fever the use of bile salts may replace that of bile, and offers certain advantages. In an earlier article in the same journal he had shown that with the use of a solution of bile salts, the bacilli could be cultivated even whilst the Widal reaction was absent or only weakly positive. He now states that in cases in which coagulation of the blood has occurred before examination, the clot, having been broken up with a sterilised glass rod, quickly becomes fluid after the addition of a few drops of the solution, and insertion in an incubator, and can then be used either for the Widal reaction or for the cultivation of bacilli.

R. W. Marsden.

Fornet (W.). **The precipitin reaction.** *Muench. med. Woch.*, 1906, p. 1862.

Though the discovery of "specific precipitins" has in the case of albumens been of undreamt of value in the differentiation of organic substances, Fornet points out that as yet no practical use has been found for bacterial precipitins, possibly from the fact that in the infected system antibodies arise at the same time and more readily demonstrate their presence. He suggests that the formation of the precipitins is preceded by "precipitinogens," and in order to show their presence in a patient's serum, he recommends that such serum should be mixed with a corresponding immune serum. Having shown that sera corresponding to these two, but obtained artificially by infection of guinea-pigs, gave specific precipitates, even at a time when no agglutinating

or specific bactericidal properties had developed in the blood, he examined two cases of doubtful typhoid fever. In both cases, which were in the earliest stages of the attack, he obtained positive results, though the Widal reaction in each instance was quite absent. At the same time typhoid bacilli were cultivated from the blood.

In a footnote he states that he has demonstrated the presence of specific precipitinogens in four other cases of doubtful typhoid fever, and has also shown their existence in the urine of a typhoid patient.

R. W. Marsden.

Blum (L.). **A case of arteritis in Typhoid Fever: recovery.** *Muench. med. Woch.*, 1906, p. 2194.

The patient, a young man 22 years of age, suffered from a somewhat mild attack of typhoid fever. Early in convalescence he had pain and tenderness, followed by evidence of thrombosis and inflammation in the right femoral artery. The limb below was of a lower temperature and paler than the left leg, there was no disturbance of sensation, the inguinal glands were swollen and tender, and soon there developed slight enlargement of the right leg, and diminished pulsation in the right posterior tibial artery.

Having considered the symptoms and signs individually, the writer deals with the differential diagnosis, mentioning typhoidal myositis and neuritis, and stating that the situation of the pain and tenderness with the palpation of the thickened artery are sufficient to exclude these conditions.

R. W. Marsden.

Brelet (M.). **Sudden death in Typhoid Fever in children.** *Arch. Gén. de Méd.*, 1906, p. 2393.

Sudden death in typhoid fever has been generally stated to be very rare in children under ten years of age, but Brelet has been able to collect 30 cases. In adults its occurrence has been fixed at 1—2 for every 100 deaths, but there are no figures to give any idea for children. In some cases the attack of typhoid fever was latent, the infant not having presented any signs of illness, death necessitating a medico-legal inquiry. In other cases the child had been in bed a few days, and the diagnosis of typhoid fever had been made.

Sudden death may supervene at an early period of the disease, possibly from a hæmorrhagic attack, especially from a meningeal hæmorrhage. Most commonly, however, it is a late accident arising in the third week and due to syncope. In some instances the syncopic attack has been foreseen from evidences of cardiac failure; often the patient is struck down without warning.

As regards its etiology, a connection with the following lesions has been noted: (1) pulmonary complications, especially broncho-pneumonia;

(2) meningeal hæmorrhage; (3) intestinal hæmorrhage; and (4) myocardial degeneration. With negative findings at the autopsy, intestinal or gastric reflex irritation, cerebral anæmia, and typhoid intoxication acting on the pneumo-gastric nerve, or on the nervous ganglia of the heart, have been invoked as causes.

R. W. Marsden.

Palmer (F. W M.). **Carcinoma and Gastric Hydrochloric Acid.** *Guy's Hosp. Rep.*, 1906. Vol. lx., p. 181.

Of thirteen cases of cancer affecting other parts of the body than the stomach which were examined, only two showed normal gastric acidity. Of the remaining eleven, one showed one-sixth the normal effective acidity, while the rest were all below one-fourteenth, most below one-fortieth, and several below one-hundredth of normal. Thus in the majority of cases examined the effective acidity was very greatly reduced, almost as much as in cases of carcinoma of the stomach. These results would point to the conclusion that the diminution of HCl in cancer of the stomach is due to the presence of cancer in the body, and not in the stomach itself. The gastric secretion may be affected before the later stages of the disease, and cachexia itself does not seem to be the cause of the deficient secretion.

The only case of sarcoma examined was of the melanotic variety, and the HCl was nearly normal. Four patients suffering from non-malignant surgical affections were examined, and in two very low readings—as low as most of the malignant cases—were obtained. The other two were also less than normal. These results rather impair the value of the investigation of the stomach contents as an aid to diagnosis, and suggest that diet and life in a surgical ward lead to some diminution in the gastric secretion. The effect of the mind on the secretion was considered and held to be negligible.

The almost complete absence of any symptoms of dyspepsia in all the cases of carcinoma was very striking. This Ewald has explained by supposing a substitution of intestinal for gastric juice.

E. M. Brockbank.

French (H.) and Hicks (H. T.). **Mitral Stenosis and Pregnancy.** *Guy's Hosp. Rep.*, 1906. Vol. lx., p. 33.

For the purposes of this enquiry the writers analysed 300 consecutive cases of mitral stenosis, with special references to pregnancy and labour. No case under the age of 20 was included; and in all cases rheumatism or chorea had occurred before 20 or not at all. The writers believe that heart failure is to be expected sooner or later in almost all cases of valvular heart disease, and that pregnancy may induce it in cases of mitral stenosis, though the dangers of pregnancy

in such cases have been overstated. They attribute the overstatement to the fact that previous statistics have been based mainly on cases of mitral stenosis which came under observation because heart failure had developed during or soon after pregnancy. Statistics so obtained probably leave out of court all cases of mitral stenosis which go through pregnancy without developing cardiac symptoms. Such a source of error was guarded against by analysing the obstetric histories of 300 women over 20 who had mitral stenosis with or without other lesions, treated at Guy's Hospital. The writers conclude that (1) few of these cases are sterile; (2) they are not especially liable to abort; (3) the majority bear children well; (4) when the heart failure developes in relation to pregnancy it is very often not with the first pregnancy but after several; and (5) the treatment should be the same as for a non-pregnant case of mitral stenosis.

As to marriage, the dogmatic "No" is unjustifiable, but the risks run must be made clear to all concerned, without exaggerating or minimising. Children should not be borne rapidly. If the woman has survived the age of twenty, with good cardiac compensation, the likelihood that pregnancy will accelerate the time of heart failure does not seem to be so great as has been declared in text-books.

E. M. Brockbank.

Géraudel (E.). **Four cases of painful Adiposis.** *Rev. de Méd.*, 1907.

Four cases of this affection are reported, in which the four fundamental signs, *i.e.*, adiposis more or less general, of special type, pain, asthenia and psychic troubles, are well illustrated. The first case, in a woman of 41, with a marked syphilitic history, presents the deposit of fat in the lower limbs extending from the knees to the ankles; the foot, which is normal, appears to emerge from a legging. She complains of having very fat legs, which are painful and useless. The other cases show variations from this type; the deposit of fat is variable in position; in one case both arms and legs are effected, in another, in addition to the diffuse infiltration below the knee, is a nodular deposition on the inner aspect of the thigh. Case iii. shows marked adiposis of arms and legs in a patient suffering from phthisis and otherwise much emaciated. In some cases spontaneous pain is not very marked, but can in all cases be easily elicited by pressure, and it is to be noted that at the seat of pressure the following day an ecchymosis will be noticed. Difficulty in walking up to complete inability is very marked, and is not altogether dependent upon pain; in some cases it is present before pain is felt; the muscles readily react to electrical stimulation, both galvanic and faradic. Psychic troubles, such as loss of memory and slight melancholia, are almost a constant feature.

F. G. Hack.

BRUUSGAARD (E.). **Leuchæmic and Pseudoleuchæmic affections of the Skin.** *Tillægshefte til Norsk Mag. f. Laegevidenskaben*, January, 1907.

Two cases are described in which multiple cutaneous tumours appeared in a patient with lymphatic leuchæmia. In the first of these, a chronic case, small flattened subcutaneous tumours appeared about the face symmetrically in a man of 49. As they grew larger they came nearer to the surface of the skin, which, however, did not become ulcerated; they were most marked in the eyelids. A blood-count showed 3½ million red cells and 48,000 white, of which 31 per cent. were large lymphocytes, 13 per cent. small lymphocytes, and 19 per cent. polymorphonuclears; 37 per cent. were large uninuclear leucocytes with much protoplasm and eccentric nucleus. The author describes these as lymphadenoid tumours, but adds that the connective-tissue played an important part in the morbid process. In the earliest stages of the growth of these tumours the connective-tissue was seen under the microscope to be in a condition of active proliferation, and many plasma cells were seen, together with cells intermediate in character between plasma and connective-tissue cells. Many caryokinetic figures were seen in the plasma cells, and as these grew fewer in number the small lymphocytes grew more numerous; until in the fully-developed tumour nothing could be seen but lymphocytes embedded in a fine connective-tissue reticulum. Hence Bruusgaard concludes that these lymphocytes are formed by indirect division from the plasma-cells, just as small lymphocytes are formed in the germinal centres (Flemming) of lymphatic glands by division of large cells rich in protoplasm.

In the second case, a man of 23 became leuchæmic, and died in three months. At first his blood-count showed two million red cells and 93,000 white, of which 95 per cent. were large lymphocytes, 3 per cent. polymorphonuclears. A month later the red cells were 1,820,000, the whites 130,000, with 96 per cent. large lymphocytes. Shortly before death the reds were 520,000, the whites 1,600, and of these 50 per cent. were polymorphonuclears, 40 per cent. small lymphocytes, and 10 per cent. large lymphocytes. Soon after he came under observation this patient developed numerous deep subcutaneous tumours, up to the size of peas, often confluent, all over his body, and from a distance looked as if he was pitted from small-pox. His lymphatic glands and spleen were enlarged; but shortly before death the glands, spleen, and subcutaneous nodules all grew much smaller. Microscopically, these nodules were composed of lymphadenoid granulation tissue, mostly of small lymphocytes, with a number of plasma cells, some of which were atrophic (Unna), while others showed mitotic figures. The collagen bundles were rarefied, and the infiltration was mainly confined to the tissues beneath the epidermis. In the enlarged lymphatic glands there was a vigorous proliferation of the vascular endothelium.

Bruusgaard further gives details of the case of a man of 49, who showed a papular and nodular eruption over the whole body. The papules were bluish or red or brown in colour according to their age,

and tended to break down and become covered with crusts, with much pruritus. All the accessible lymph glands were enlarged. The blood-count showed 4½ million red cells, 25,300 white; of these 30 per cent. were typical lymphocytes, 29 per cent. polymorphonuclears, 20 per cent. large mononuclear lymphocytes, 20 per cent. eosinophils, and 1 per cent. mast cells. This patient was kept under observation for three years; he improved when treatment was given—arsenic, the *x*-rays, ointment containing sulphur 20 per cent. and zinc oxide 4 per cent.—but relapsed in the intervals. His latest blood-count showed 3,700,000 red cells, 16,200 white; of these 25 per cent. were polymorphonuclear eosinophils, 40 per cent. large uninuclear cells. The diagnosis "prurigo lymphatica" is suggested; the older papules show much proliferation of the connective-tissue and the vascular endothelium; the more recent growths consisting largely of white blood-corpuscles, aggregated round the vessels. Some of the cutaneous growths resemble urticarial pomphi closely, showing evidence of an acute inflammatory process. Many references to the literature are given.

A. J. Jex-Blake.

Tendiloo. **Aero-lymphogmous Tuberculosis.** *Muench. med. Woch.*, January, 1907.

The author of this paper has apparently devoted many years of study to the paths of infection in tuberculosis, and here presents a resumé of his mature views on the subject. To put it briefly, his contention is that the tubercle bacilli are taken up from the mucous membrane of the upper respiratory passages and pass into the lymph-channels, whence they are drawn by the respiratory movements of the thoracic cavity to those parts of the lung which are most usually affected earliest. That portion of the lungs he defined as the "cranial paravertebral" division, meaning by that expression the upper division of the lung if it be divided by an oblique section through the line of the fifth rib, and that portion of this upper division which lies parallel to the spinal column. The review of the pathological lesions is interesting and exhaustive, and, as the author contends, goes far to show that in human tuberculosis the lungs are seldom if ever infected from a primary lesion below the diaphragm. The paper is interesting from the theoretical point of view, and undoubtedly there is some force in the author's arguments, but, though plausible, it does not carry absolute convictioin.

Fischl (R.). **On Hysteria in Children.** *Prager. med. Woch.*, December 20, 1906.

This paper represents an excellent summary of some of the manifestations of hysteria in children. The author wisely, we think, protests against the practice of designating as hysterical many of the neuroses, and confines the term to well-marked symptoms, simulating organic disease. There is nothing strikingly original in the paper.

Hugh Thursfield.

Fraenkel (E.). **On the Möller-Barlow Disease (Infantile Scurvy).** November 6, 1906.

This long article contains an exhaustive review of the disease known in this country as infantile scurvy. On the Continent there have been for a long time two conflicting opinions—one which regards the disease as merely a special form of rickets, the other, much less widely accepted, which has recognised the value and authority of Barlow's work, and has accepted his view of the nature of the complaint. Fraenkel has seen a large number of cases, and has investigated them clinically and pathologically with great thoroughness. He gives, for instance, an admirable account of the characteristic post-mortem lesions, and also compares in detail the alterations in the histological structure of the bones affected with that of healthy and ricketty bones of children of the same age. In his conclusions he adopts the view which regards the disease as essentially identical with scurvy.

Michaud (L.). **On the recognition of Congenital Idiopathic Hypertrophy of the Heart.** *Corres. Blatt für Schweizer Aerzte,* December 15, 1906.

Dr. Michaud reports a case of this rare condition, and analyses the literature of the subject, which is scanty. From his analysis and his own case it would appear that from time to time children die in the first four or five years of life with ascites and dyspnœa, in whom no cause of death is recognisable, beyond the enormous size of the heart. In Dr. Michaud's own case the heart of a three-year-old boy weighed 5 oz., but was otherwise normal. Another case is recorded by Hedinger where the heart of a child of fourteen months of age weighed 6½ oz. without any abnormality beyond the muscular hypertrophy.

Michaud points out that there are three theories which have been advanced to explain these cases—the first connects the hypertrophy with malformations or disease of the kidney. This he rejects because histological examination of the kidneys and the clinical history of the cases lends it no support. The second hypothesis is that of a diffuse muscle-tumour, which ranks merely as a "pious opinion." The third to which Michaud leans attributes the hypertrophy of the heart to disease of the supra-renal bodies, and the nerves of that area. He admits that there is little or no evidence of the truth of this theory, and speculation in this direction seems to us futile. The value of the paper lies in the careful clinical and statistical record of the instances of the condition.

Hugh Thursfield.

Thayer (W. S.) and Fabyan (M.). **The Paravertebral Triangle of Dullness in Pleural Effusion (Grocco's sign).** *Amer. Journ. of Med. Sci.,* 1907, p. 26.

In thirty-two cases of pleural effusion investigated by the writers a paravertebral triangle of dulness at the base of the opposite side of the chest (Grocco's sign) was clearly demonstrated in thirty. In one of the remaining cases, one with a small effusion in which the examination

was rather hastily and imperfectly made, but a small, indefinite area of dulness was noted. In the other case the absence of the paravertebral triangle was easily explained by the position of the exudate—an interlobar empyema. In a third instance, in which a triangle was demonstrated later, it was missed on the first examination. The sign, therefore, may be regarded as practically constant in cases in which there is free fluid in the pleural cavity, or in which an encapsulated effusion impinges on the spine.

The triangle is an area of relative dulness, the vertical side of which is represented by the line of the apophyses of the vertebræ, the apex reaching a point somewhat above the level of flatness of the effusion; the base is formed by the lower limit of pulmonary resonance on the healthy side for a distance of from 2 to 7 cm. from the spine; the hypothenuse, by a line connecting these points. This last line shows, sometimes, a slight outward convexity. The dulness is more marked as one approaches the spine. In the triangular area of dulness the respiratory murmur is often suppressed and of a quality similar to that heard over the effusion. Ægophany or a nasal quality of the voice sounds may also be present. The coin sound, when the manœuvre is carried out by placing the coin on the front of the chest below the level of the effusion, shows the same metallic ring as that which is observed over the affected side. These signs may be so marked as to make it possible to outline the area of the triangle by auscultation.

When the patient lies on the affected side the triangle of dulness diminishes or disappears, and returns again when the erect posture is assumed, or when the patient lies on the other side. It is usually larger on the left side, that is, in the case of right-sided effusions, than on the right. In three cases of encapsulated effusion the presence of a paravertebral triangle of dulness on the opposite side proved of real diagnostic assistance.

The writers' experience justifies the conclusion that the paravertebral triangle of dulness is a remarkably constant and characteristic sign of fluid in the pleural cavity. It further supports the assertion of the discoverer that it may be of particular value in the case of encapsulated effusions. They regard the sign as an important addition to our means of diagnosis of effusions in the pleural cavity.

As to its cause, they are inclined to accept the explanation offered by Baduel and Siciliano, namely, that the fluid, lying against and passing anteriorly over the bodies of the vertebræ, acts as a mute in suppressing the sonorous vibrations of the spine. This deadening of the resonance is naturally appreciable for a certain distance beyond the median line over the area occupied by the transverse processes and the first part of the ribs. It is more marked and extends over a wider area at the base, where the fluid, collecting in the sinus of the pleura, comes into wider contact with the vertebræ and pushes farther around toward the opposite side. The displacement of the contents of the mediastinum—aorta, œsophagus, azygos vein, heart—may play a part, especially in effusion on the right side of the chest, in producing this dulness as well as in bringing about a certain degree of compression

of the lung on the opposite side. Although there may be a small strip of dulness along the spine on the side opposite in pneumonia, the writers have but once detected anything approaching a paravertebral triangle. In this instance the dulness was not very definite and showed little or no change on change of position.

E. M. Brockbank.

Gray (H. M. W.). **Duodenal Ulcer: six cases of perforation.** *Scottish Med. and Surg. Journ.*, 1907.

In this article the author reports six cases of perforation of duodenal ulcer, all in males, with five recoveries and one death. In this latter case the operation was not performed until two days after perforation. He summarises the symptoms of duodenal ulcer as follows:—

1. Pain coming on as a rule two to four hours after food, though this time limit is by no means always to be relied on. The pain is generally in the epigastrium and well to the right of the middle line.

2. Tenderness on pressure just to the inner side and below the region of the gall-bladder.

3. Hæmorrhage is said to occur in one-third of the cases. Profuse hæmorrhage is even more frequently present than in gastric ulcer, and arises from the pancreatico-duodenal vessels, though it has arisen from ulceration into hepatic artery, portal vein or even inferior vena cava. Melæna is much more common than hæmetemesis. Owing to the duodenal walls being very thin, the peritoneum is more frequently affected than in gastric ulcer, resulting in the formation of adhesions to adjacent structures. Chronic perforation into these adhesions may take place, being followed by subphrenic abscess. Contraction of the adhesions or cicatrisation of the ulcer may result in pyloric stenosis with the formation of a dilated stomach.

Duodenal ulcer seems to be more highly resistant than gastric ulcer, hence it is more liable to be complicated by serious hæmorrhage, perforation or pyloric stenosis. In view of all these risks operative treatment should be recommended if it does not readily yield to medical treatment. Operation is more urgently called for (1) in small repeated hæmorrhages or in repeated severe hæmorrhages; (2) in pyloric stenosis; (3) in perforation, acute or chronic. For hæmorrhage and stenosis gastro-enterostomy is the operation of choice, and if there is hæmorrhage at the time, a purse-string suture should be run round the ulcer. In acute perforation there is no question of delay. Gray does not advocate waiting till the shock passes off, as it may never do so, but advises infusion with saline solution into the veins as soon as the patient goes under the anæsthetic, and attributes much of his success to this. He believes that evisceration is the only way of cleansing the abdomen when there is general infection. He does not support gastro-enterostomy at the time of operation for the perforation, as it greatly increases the time taken and the shock, but recommends that it should be done ten or twelve days later when the adhesions are still soft and can easily be separated.

P. R. Wrigley.

Surgery.

LIMNELL (A. R.). **A contribution to our knowledge of Tubal Gestation.** *Nord. Med. Arkiv.*, 1905. Afd. 1 (Kirurgi), Häft 3 and 4, Nr. 14.

THIS paper is a study of 90 radical operations performed at the gynæcological clinic at Helsingfors for tubal gestation between August, 1889, and the end of 1904. Four cases are discarded on account of insufficient reports, and two cases were operated upon twice. Thus the paper deals with 84 cases.

In discussing ætiology, the following arguments are brought forward in favour of the affection having an acquired rather than a congenital basis:—

1. The frequency of a history of tubal inflammation.

2. Of these 84 patients, 75 were married, 3 were widows, 6 were single, 5 belonged to the upper classes, 79 to the working classes, and of these 79, 40 were the wives of labourers or peasants.

3. Of the 78 married cases, 61 were mothers, and of the 6 unmarried cases, 4 were mothers.

4. There was usually a considerable period of sterility antecedent to the tubal gestation.

Two cases occurred at the uterine end of the tube; 8 cases in the middle of the tube; 13 cases were not accurately located; and 63 cases were situated at the abdominal end of the tube. The right tube was affected in 46 cases, and the left in 39 cases. The interesting case (previously reported by Heinricius and Kolster) is described, when two embryoes of different ages were found post-mortem in the same tube. Only in four of the cases was a mature macerated fœtus found in an unbroken sac. In seven other cases the embryo had reached a development of 4—5 months, when the pregnancy was interrupted by the death of the embryo or by the rupture of the sac. All the remaining 75 cases terminated earlier, in most cases by rupture of the sac in the first few weeks of gestation. In one case the ovum was expelled entire into the abdominal cavity, and in one other case the ovum was partially extruded through the abdominal ostium of the tube.

Short notes are given of 13 cases of "hæmatoma formation" without bleeding into the abdominal cavity, and also of 11 cases of hæmatoma in the tube with free blood near it in the abdominal cavity. An encapsuled hæmatocele was found in 37 cases operated on for tubal abortion. In one case this lay between the uterus and the bladder.

As regards the symptoms and diagnosis of the condition, it was noticed that in 39 out of the 75 cases the interruption of the pregnancy was the first symptom of its existence. The date at which interruption occurred was:—At less than four weeks in 34 cases; at about one month in 2 cases; at between one and two months in 22 cases; at about

two months in 10 cases; at between two and three months in 3 cases; at an unascertained date in 4 cases. The interruption took the form of tubal abortion in 67 cases, and of rupture in 8 cases.

The most essential symptoms of tubal abortion are bleeding from the uterus and pain in the abdomen. Pain followed by bleeding occurred in 5 cases. In 6 cases there was pain and indisposition only without bleeding. In all the other cases there was a sudden onset of simultaneous bleeding and pain.

Bleeding started:—

1. At the time when the menses were due, and was (*a*) uninterrupted in 13 cases, (*b*) interrupted in 1 case.

2. Shortly after the last menstruation, and was uninterrupted in 4 cases.

3. Some time after the last menstruation, but before the end of an inter-menstrual interval, and was (*a*) uninterrupted in 12 cases, (*b*) interrupted in 2 cases.

4. After a period of amenorrhœa due to lactation, and uninterrupted in 3 cases.

5. After missing (*a*) one period and (i.) uninterrupted in 18 cases, (ii.) interrupted in 1 cases; (*b*) two periods and (i.) uninterrupted in 7 cases, (ii.) interrupted in 1 case.

The pain was in the lower abdomen, and often on the affected side. It was commonly periodic, and increase of pain and bleeding occurred together. Of 4 cases of collapse, 2 were due to hæmorrhage, and 2 were of nervous origin.

If rupture occurred into the lumen of the tube the bleeding was generally gradual; if it occurred externally the bleeding was profuse.

The treatment was operative in all the cases. Four cases died, 1 from peritonitis, 1 with fæcal fistula, sepsis and broncho-pneumonia, 1 as a result of pre-operative infection due to rupture into the neighbourhood of the rectum, and 1 from some uncertain cause. Eighty-one cases were cured, or 94·2 per cent.; 1 case was improved, or 1·2 per cent.; 4 cases died, or 4·6 per cent. Of the 84 patients, 41 answered letters of inquiry; of these 41, 4 were operated on again later for tubal gestation on the opposite side, 1 was curetted six years later for chronic endometritis, and 36 had enjoyed good health since their operation. Of these 36, 5 had subsequently had one normal confinement, 2 had had two, 1 had had first an abortion and then a normal labour, and 1 had had an abortion only.

G. F. Darwall Smith.

Leriche (R.). **Results of Resection of the Stomach for Carcinoma.** *Revue de Méd.*, 1907.

Leriche commences by deploring the fact that while cancer of the stomach does not early invade surrounding structures, and only gives rise to metastases at a late date, yet exploratory laparotomy, which is the only means of certain diagnosis, is delayed until too late. He thinks that the future holds great promise, as the published results of

gastrectomy are relatively excellent, especially when one considers the imperfect technique of the past. It may be said that if the third year is free from recurrence a cure has been obtained, though there are exceptional cases of recurrence in the third and fourth years.

In 1896 Wölfer gave a list of twenty-four cases operated on, with a survival of from two to eight years. In 1906 Paterson collected eighty-six cases of partial or complete gastrectomies, with twenty-one free from recurrence at the end of three years and fourteen at the end of five years.

The author of this paper collected ninety-four cases without recurrence at the end of three years. Amongst these there were five with recurrence later—one in the third year, two at the end of four years and a half, one after five years, and one in the fifth year. There still remain eighty-nine cases so far without recurrence, the oldest dating from six years and three months, five from at least six years, and thirty-four from five to six years. The majority of these were cases of pyloric tumour, but several were from growth of the body of the stomach, and one from resection in carcinoma of the cardiac end of stomach.

Petersen and Colmers place the number of permanent cures at 20 per cent. The condition of patients who have recovered after gastrectomy is perfect; they have for the most part returned to their occupations, have an excellent appetite and digestion. They all show a deficiency of hydrochloride acid, and a few have lactic acid present, though this is not constant. Occasionally after a test meal bile is found in the stomach, but this causes no inconvenience. They neither suffer from nausea nor vomiting. They can eat according to their desires, though the reduced capacity of the stomach hardly permits a very large meal.

On these results Leriche states that all tumours of the stomach ought to be removed when it is anatomically possible and when the general condition is no bar to operation. It is so very important to operate early in these cases that it should be a definite rule to suspect carcinoma in all persons about fifty years of age, who, hitherto in good health, complain of stomach trouble and lose flesh, and after giving a fair trial to therapeutical methods an exploratory laparotomy should be done. The absence of vomiting should not mislead one, as Delore and Leriche have shown that one of the most frequent forms, cancer of the antrum, does not cause vomiting until after a long period of dyspepsia, and this variety presents itself under the best conditions for a wide resection. When a tumour can be felt, one's views should not be based on the apparent fixity of the tumour, as its real fixation can only be ascertained after careful exploration.

He concludes by saying that all cancers of the stomach, whatever their condition, local or general, whether the diagnosis be certain or only probable, should, as carcinoma elsewhere, be operated on in eight days, as you may give them a chance of a permanent cure or at least freedom from recurrence for fifteen to eighteen months.

P. R. Wrigley.

Pathology.

Schloessmann (H.). **The occurrence and detection of soluble Protein in the fæces of adults.** *Zeit. f. klin. Med.*, 1906.

After describing and discussing the weak points of the method hitherto used for the purpose of identifying the soluble albumins of the adult fæces, the author gives the following modification of Ury's procedure, by which the presence of nucleo-proteids—the cause of many untrustworthy observations—is avoided. The fæces passed during the day are well rubbed in a mortar with water to a fairly fluid consistence, making about 500 c.c. After standing a few hours the mixture is filtered through a double-folded filter; if the filtrate is turbid, it must be re-filtered through a filter that has been sprinkled with kieselguhr (diatomaceous earth), in order to obtain a perfectly limpid filtrate. To this a little 30 per cent. acetic acid is carefully added so as to precipitate any nucleo-proteid, which is then filtered off, as before, through paper covered with kieselguhr until a clear filtrate is obtained. This second filtrate must be shown to be free from nucleo-proteid by adding a drop or two of 3—5 per cent. acetic acid; if it remains clear, absence of nucleo-proteid may be assumed. In addition to nucleo-proteid two other substances—mucin and casein—are precipitated by the acetic acid, thus leaving only albumin, should any be present. The albumin tests used are three—the boiling test with the addition of sodium chloride, the nitric acid contact test, and the potassium ferro-cyanide test.

Schloessmann thus summarises the results he obtained:—The precipitates thrown down by the acetic acid chiefly consist of the nucleo-proteid of the fæces; exceptionally mucin forms a part. Excessive ingestion of food rich in nuclein substances produces no change in the fæces of adults; in children, an increase in nucleo-proteid excretion results. In pathological conditions an increase in the nucleo-proteid of the fæces occurs, but the increase is not constant, and is not characteristic of specific diseases. Soluble albumin is never found under normal conditions in the fæces of adults. When present it is almost always due to diarrhœa, and is accompanied by excessive mucous secretion. The pathological protein in adult fæces is principally albumin; less frequently albumoses are present, indicating severe intestinal mischief. The albumin of pathological stools is chiefly derived from the walls of the intestines, and is serum albumin. Inasmuch as, under normal conditions, the absorption of protein chiefly takes place in the small intestine, the large intestine is mostly free from albumin.

Stern (A.). **Cysticercus of the fourth Ventricle.** *Zeit. f. klin. Med.*, 1907.

The author relates a case of cysticercus of the fourth ventricle, and gives a tabular account of all the other recorded cases (seventy-two in all). The author's own case was that of a man aged 20 years, who began to squint, which he attributed to an accidental injury to the head. When admitted into hospital he had internal strabismus, nystagmus, inequality of pupils, but no retinal changes, deviation of the tongue to the right, along with psychical anomalies. He vomited frequently, and was sleepy. He complained of vertigo and double vision. The face was expressionless, and the speech slow and monotonous. He held the head stiff and avoided moving it. Knee-jerks lively; no ankle-clonus nor Babinski. Sensation normal. Lumbar puncture was made, and the spinal fluid showed a pressure, at first, of 620 m.m., which gradually fell to 270, the pulse and respiration being extremely irregular at the time. The excessive pressure of the spinal fluid was doubtless due to free communication between the fourth ventricle and the spinal canal; subsequently the communication was blocked by the growth and the pressure reduced. The patient felt very much better after the puncture; he was less somnolent, and the movements of the eye were freer. Lumbar puncture was resorted to on three subsequent occasions, but the pressure never reached that of the first puncture. A febrile state ensued, and the patient became unconscious; the pulse was 128 to 140 in the minute. Eventually the pulse suddenly ceased and profound cyanosis occurred; the respiration at the time was deep and slow, when death occurred. The section revealed cysticercus of the fourth ventricle with external and internal hydrocephalus.

Tape-worm may infect its host with cysticercus, though more frequently the infection is from without. The chief symptoms of localisation of a cysticercus in the fourth ventricle are indications of cerebral compression—headache, vertigo, vomiting, somnolence, and optic neuritis. Indicative of disease in the posterior cranial fossa are pain in neck with stiffness, vertigo and cerebellar ataxia, continuous violent coughing and slowing of the pulse. Occasionally diabetes, derangements of respiration and paralysis of the cranial nerves occur. Extraordinary changes in the symptoms, from extreme severity to periods of entire absence, causing a tendency to the diagnosis of functional disorder only. Brum's symptom—vertigo on movement or turning the head, with pain in the head, etc.—is very characteristic of a free cysticercus in the fourth ventricle. Sudden death, usually from respiratory paralysis, is the usual termination. The three last-named symptoms are the most suggestive. Stern narrates one case, which was diagnosed as hysteria, of a woman aged 40, who was admitted into hospital in a partially unconscious state, with closed eyes, contracted pupils, slow pulse (54), but without any paralysis or other objective signs. The patient recovered and left the hospital in twelve days. She was re-admitted sixteen months later with similar symptoms and

vomiting. Whilst in hospital she suddenly lost consciousness and became collapsed; she was paralysed in all the limbs. In ten minutes the attack passed off, and the patient left the hospital, after a stay of eight days, quite recovered, the diagnosis again being hysteria. She was again admitted four months later, and died suddenly. The section showed cysticercus of the fourth ventricle with internal hydrocephalus. A copious bibliography is appended.

Aronsohn (E.). **Researches on augmented Protein-metabolism.** *Zeit. f. klin. Med.*, 1907.

A long series of critical observations are recorded on protein-metabolism in fever, malignant disease, Graves's disease, pernicious anæmia, tuberculosis, dyspnœa, severe muscular work, and in poisoning by phosphorus, arsenic, antifebrin, etc. The conclusions arrived at are at variance with some of the opinions which at present prevail. The author holds that excessive protein-metabolism is due to nerve-influence and to the action of ferments. He disputes the existence of a toxic destruction of protein, and regards the supposition as unfounded. He holds that excess in protein-metabolism is due either to impoverishment of the tissue-cells as regards carbohydrates and fat, or to fever and excessive nerve-excitation, or to cachexia. The augmentation in fever is due to excessive innervation of the cells (irritation of the heat-centre). The excessive protein-metabolism in fever is a characteristic peculiarity of the febrile state. Excessive protein-metabolism does not go hand in hand with malignant disease; it is only observed when fever developes or when impoverishment of the cells occurs or when heterolytic ferments from the decomposition of the malignant deposit reach the blood. Graves's disease occurs with normal metabolism when it is not complicated with fever or excessive nervous irritability. The urea excretion in pernicious anæmia is normal unless there is fever, when the urea is increased. The protein-metabolism is not increased in phthisis unless there is fever. The same applies to poisoning by phosphorus, arsenic and chloroform. In loss of blood, dyspnœa and muscular exertion any increased nitrogen excretion is due to the action of the nervous system and to ferments.

J. Dixon Mann.

Karakascheff (K. I.). **The Islands of Langerhans and Diabetes Mellitus.** *Deutsch. Arch. f. klin. Med.*, 1906, 87 p. 291.

The author has had the opportunity to examine the pancreas carefully in five cases of severe diabetes mellitus ending in coma. Full accounts of the naked eye and microscopic appearances of the glands are given; the patients were passing $3\frac{1}{2}$—14 pints of urine, containing from 3 per cent. to 8·5 per cent. of glucose. In every case he found more or less well-marked fatty degeneration and glandular atrophy of the

pancreas, with consecutive increase in the fibrous tissue. In one case the atrophy seemed due to blocking of the duct of Wirsung, in two cases to arterio-sclerosis. In four of the cases the islands of Langerhans were only a little reduced in number; in the fifth they showed extensive degeneration, and this the author connects with the fact that the vessels and capillaries around them showed great sclerosis. But in all five cases it was clear that both the pancreatic glandular tissue and the islands were involved together in the causation of diabetes; and the islands were engaged in proliferating and regenerating new acini to take the place of the degenerated tissue. Hence the islands have no specific connection with the production of diabetes mellitus. Karakascheff further describes his examination of five fœtal pancreatic glands, which further supports his view that the islands are merely incompletely developed embryonic remains or reserve-organs that are ready to develope into normal pancreatic acini should occasion demand.

Marchand, the Director of the Institute at Leipzig at which Karakascheff worked, adds a note to this paper, referring to two further publications on the pancreas appearing since Karascheff wrote, by Helly and by Herxheimer. Helly holds that the islands are organs *sui generis*, and that they never can develope into pancreatic acini, and are not a kind of reserve-material. Marchand thinks Helly's conclusions are unjustifiable. Herxheimer believes that he is able to trace the conversion of acini into islands, and thinks that the appearances noted by Karakascheff may better be interpreted in this sense than in the converse. Marchand rather supports this view, concluding that the islands are not a tissue *sui generis*, have no specific function, and are not of special importance in diabetes mellitus.

A. J. Jex-Blake.

Blumenthal (F.). **The B. coli and B. typhosus group in infections of the Bile Passages.** *Deutsch. Arch. f. klin. Med.*, 1907, 88, p. 509.

The author remarks that *B. coli* has very frequently been found in the gall-bladder of persons suffering from infection of the bile-ducts, and that in most of these cases no particular care has been taken to differentiate between *B. coli communis* and other bacteria closely allied to it. His own observations have been made upon the bile of 14 patients operated upon for cholelithiasis. In 4 cases the bile was sterile; in 10 the author found bacilli of the *B. coli* or *B. typhosus* groups, and he gives a table in which 14 cultural characterics of the microbes found are set out. In 4 of the 10 he found a typical *B. coli communis*; in 1 a *B. coli* that did not ferment sugar, grape sugar, or lactose; in 4 *B. typhosus*; and in 1 *B. paratyphosus*, type A.

Blumenthal discusses the literature of the agonal or post-mortem infection of the bile with *B. coli*. He remarks that even when *B. coli* is found in the bile during life, it may be present only accidentally, and not as the actual cause of the inflammation present in the gall-bladder or bile ducts. Thus in one of his cases a gall-stone was removed, and

B. typhosus was found in pure culture in the bile; five days later *B. coli* predominated over *B. typhosus* in the bile discharged from the operation wound, but on the eleventh day the bile was sterile once again, and the patient made a normal recovery. In another of his cases he found an ordinary *B. coli* together with a *B. coli* that did not ferment sugar; the latter agglutinated with the patient's serum diluted 1 to 1,000; the former was not agglutinated by this serum at all. Blumenthal thinks that the importance of *B. coli* in the production of cholecystitis is overrated, that of *B. typhosus* unduly neglected. Thus he found the *B. typhosus*, cultivated from the bile of a patient with cholecystitis who had had typhoid fever seven years previously, was agglutinated by her serum at a dilution of 1 to 5,000; while an ordinary *B. typhosus* culture was agglutinated at a dilution of 1 to 50 only. He gives details of a second similar case, and discusses the danger to public health that may be occasioned by persons who may continue for years to pass in the fæces *B. typhosus* derived from the gall-bladder.

A. J. Jex-Blake.

Hollins (A. W.) and Ditman (N. E.). **The theory of the toxic origin of Pernicious Anæmia.** *Med. Record*, February 2, 1907.

The causation of pernicious anæmia is still a matter of dispute, and various theories have been suggested. Most authorities now exclude from the term those anæmias which depend on such conditions as anklyostomiasis, chronic atrophy of the stomach and chronic hæmorrhage and the rôle played by pregnancy, great shock or fright and repeated hæmorrhages, is regarded with increasing scepticism, and the infectious theory is far from proven. The hæmogenetic theory of the origin of the disease is suggested by the remarkable reversion of the bone-marrow to its fœtal condition has had to be modified since the hæmolytic changes have been noted, and the theory that now holds the field is the toxic theory. The authors accept the opinion of Hunter that hæmolysis occurs in the portal system, but they suggest that pernicious anæmia is the result of absorption of toxins formed in the large intestine by the action of anaërobic micro-organisms. Herter has shown that oxygen is present in the intestine only as far down as the ileo-cæcal valve, and on this observation and the successful results of colon irrigation in two cases of pernicious anæmia the authors base their theory.

E. N. Cunliffe.

Therapeutics.

Zieler (K.). **The rationale of the modern treatment of Gonorrhœa.** *Muench. med. Woch.*, February 1907, p. 305-10.

Zieler lays great stress on the natural curative action of the inflammatory process set up by the entry of the gonococci, and makes it a prime condition in the treatment that nothing should be done to check this inflammation so long as there is evidence of the presence of gonococci. The treatment should be directed to the removal and destruction of the infective organism from the urethral canal by an agent like protargol, which at the same time has a tendency rather to set up slight inflammation than to check it, such as would occur with astringents. He bases his conclusions, besides the results of experience, on Lohnstein's experiments on the rabbit's urethra with solutions of silver nitrate, protargol, etc. The former produced little or no small cell proliferation, but much thickening of superficial layers and slight deposits of silver; whilst protargol produced considerable small cell proliferation and no thickening of epithelium.

J. M. Bernstein.

Biland (J.). **Suprarenal Extract and Cardiovascular Disease.** *Deutsch. Arch. f. klin. Med.*, 1906, 87, p. 413.

In 1903 Josué found that the intravenous injection of adrenalin produced arterio-sclerosis, and numerous observers have confirmed this observation since then. The larger arteries only are affected, the small arteries and arterioles showing no change. Ziegler observed calcification in the aorta after no more than seven injections. The process begins with necrosis of the middle and internal parts of the arterial media; calcification soon follows the necrosis, the vessel wall becomes thinner, and in a little time the affected area becomes surrounded with a zone of inflammation, and may form the origin of an aneurysmal dilatation. The intima is often thickened; the endothelium remains intact.

Biland himself used a 0·1 per cent. solution of suprareninum hydrochloricum, injecting 0·03 to 1·0 c.cm. intravenously every day into a number of rabbits. In eight cases 0·1 to 2·0 grams of potassium iodide were injected simultaneously; and it is curious to remark that the vascular changes were more marked in the animals receiving the iodide with the suprarenal injection than in those that had the latter injected alone. One rabbit died of hæmoptysis after four injections: two died after receiving 58 injections of extract and iodide together: the other 15 were killed after they had had from 30 to 60 injections.

Of the 10 rabbits given suprareninum alone, 4 showed no vascular changes at all. The other 6 showed aneurysmal dilatations and calcified plates in the aorta. Only one of the 8 animals receiving extract and iodide showed no vascular degeneration. Except in the

aorta, no arterio-sclerotic changes were found. Biland notes the variation in the resistance of different individual animals to the action of suprarenal extracts, which has been observed before and is unexplained. The general health of most of the rabbits suffered during the course of the experiments. The immediate effect of the injections was to double the arterial blood-pressure, or more; it might rise from 95 mm. Hg., for example, to 180—222 mm. Hg., returning to or even to below 95 mm. Hg. in from 5 to 7 minutes. If the injection was immediately repeated the arterial pressure rose again, but only 20—30 mm. Hg., and even forty times the original dose would not raise the blood-pressure much more than that. Hence the atheroma produced by the extract is not due to chronic high arterial pressure. In only 7 out of the 18 rabbits was even moderate hypertrophy of the heart to be seen.

Various authors have found a great variety of changes (induration, infarction, hæmorrhages, necrosis, leucocytic infiltration, pigmentation, etc.) in the various organs of the body of animals treated with suprarenal extracts. Biland examined the kidneys of his animals with care, and found numerous areas in which there was necrosis of the epithelium of the tubes, together with the deposition of calcium salts in the lumina of the convoluted or straight tubes. Occasionally interstitial deposits of lime salts were seen. These deposits were marked in 7 out of the 8 animals treated with the extract and potassium iodide together. He argues that they show a general toxic action, and he found that the urine of his animals was extremely toxic to normal rabbits, the intravenous injection of 0·5—1·0 c.cm. causing death with convulsions to occur. ——— A. J. Jex-Blake.

Webster (R. W.). **The pathology and treatment of Nephritis.** *Amer. Journ. of Med. Sci.*, 1907, p. 271.

The author thinks that nephritis should be regarded as primarily a constitutional disorder with secondary involvement of the kidneys. In every case the causative factor is one which produces marked metabolic or functional disorders that result in the production of toxins or circulatory changes which act on the kidney. The author proceeds to discuss the production of cardio-vascular changes, œdema and uræmia. He is of opinion that the assumption of a causal relation of retention of chlorides to œdema is debatable, and quotes Croftan to the effect that uræmia is primarily dependent on insufficiency of the liver, following a general metabolic disorder, and that the kidney is only secondarily important in its causation.

The treatment recommended by the author is based on von Noorden's work. No distinction need be made between white and red meats. The limitation of salt in the diet is unnecessary, since the theory in which its deprivation is based is untenable. E. N. Cunliffe.

Edsall (D. L.) and Pemberton (R.). **The use of the x-rays in Unresolved Pneumonia.** *Amer. Journ. of Med. Sci.*, 1907. p. 286.

The use of the *x*-rays in unresolved pneumonia is suggested by consideration of the opinion that the remarkable effects of the *x*-rays on

metabolism in leukæmia is most readily and satisfactorily explained as due to the acceleration of autolytic processes inherent in the tissues, these processes being probably of the nature of fermentation. The probable cause of failure of resolution in pneumonia is insufficiency of digestion of the exudate, and it is logical to suppose that acceleration of the digestive process will take place under the influence of *x*-rays.

The authors in three cases adopted *x*-ray treatment with highly favourable results. That these results were due to the *x*-rays is indicated, they think, by the fact that the urinary examination showed a remarkable increase of metabolism, as indicated by increase of nitrogen, chlorides and phosphates.

The authors think that great care should be employed in choosing cases suitable for the treatment. Cases that have lasted longer than a few weeks cannot be expected to recover, and where there is continued inflammation of the lung and not merely lack of resolution the application of *x*-rays might prove highly dangerous.

E. N. Cunliffe.

Pancoast (H. K.) **Experimental an practical application of the x-rays in diseases of the Blood and Blood-forming organs, with reports of cases, and a review of the literature on the subject.** *Univer. of Pennsy. Med. Bull.*, January, 1907.

The author's conclusions are based on his own observations and a consideration of the reported cases. He believes that the *x*-ray treatment of Hodgkin's disease is more encouraging than in leukæmia. A cure for at least three or four years may be obtained in something like 25 per cent. of cases of Hodgkin's disease and in cases not cured life is prolonged and a period of comparative comfort ensured, whereas no other therapeutic agent can yield results as good. In leukæmia only 6·35 per cent. of the cases investigated were well at the end of three to six years after the primary symptomatic cure, and the most that can be claimed for it is that the enlargement of the spleen is lessened, and the number of leucocytes reduced in the majority of cases with the production of a symptomatic cure, but the true cause of the disease is evidently not destroyed. The author is of opinion that the destruction of the leucocytes (existing in an abnormal state both as to numbers and structure) and abnormal deposits of lymphoid tissue is due to the stimulation of an autolytic process through some action of the *x*-ray. That the process is a destructive one is shown by the increase of nitrogenous waste products in the urine. In polycythæmia, splenic anæmia and pernicious anæmia *x*-ray treatment has been applied with conflicting results, but they have been unsatisfactory for the most part. Finally, the author is strongly of opinion that many cases of sudden death have occurred owing to the exhibition of *x*-rays in patients suffering from grave diseases, especially where toxæmia was present, as in pernicious anæmia and leukæmia, and he thinks that the metabolism of all patients should be studied before exposure is allowed.

E. N. Cunliffe.

Reviews.

"A System of Medicine." By many writers. Edited by Thomas Clifford Allbutt, M.A., F.R.C.P., F.R.S., etc., and Humphry Davy Rolleston, M.A., M.D., F.R.C.P. Volume ii., Part 2. London: Macmillan and Co. Ltd, 1907. Price 25s. net.

This volume deals with tropical diseases and animal parasites, and forms a complete work on tropical medicine, which anyone, so minded, could buy without the rest of the system. All the animal parasites are included in the volume, not only those peculiar to tropical climates. A very valuable feature of the book are special articles on the animal parasites and carriers of tropical diseases which are included in it. These articles, or, as the preface says, condensed monographs, and their writers are Protozoa (Prof. Minchin), Mosquitoes (Mr. F. V. Theobald), Blood-sucking and other Flies known or likely to be concerned in the spread of Disease (Mr. E. E. Austen), and Ticks (Mr. R. I. Pocock. They are freely illustrated, and cannot fail to be most instructive and valuable practically to observers in the tropics. The illustrations are excellent. The article on Worms by Sir Patrick Manson has been brought thoroughly up to modern zoological knowledge by Mr. A. E. Shipley, and is also well illustrated. It is not possible in the short space of a review to do justice to all the good things in the volume; the articles are naturally very interesting as they deal with the important subject of the health of our colonies, and contain all the recent observations on the ætiology of those diseases which form most of the risks which a European runs in going to live in the Tropics. Very encouraging pages are those which deal with the results of sanitation and other measures in preventing these diseases, for such knowledge is most useful, not only for general purposes, but also for weighing insurance risks for lives going out to equatorial regions. It is very valuable to know that if a man will take reasonable care of himself, use the mosquito net habitually and properly, take quinine regularly, avoid alcohol and all unboiled water and milk, he may live in the unhealthy districts of the West Coast of Africa with a very great probability of keeping well. Much of this information was known twenty years ago from experience, but was sceptically received by many residents in dangerous regions. Now the reasons for such safeguards to health have a scientific basis, and are properly appreciated, with the result that the death and invaliding rates have improved very considerably, especially in the last five years.

Without wishing to be invidious or to select for notice anything for its special excellence amongst so many good things, we may refer to the account of Blackwater Fever, by Dr. J. W. W. Stephens, simply because we have read it with much interest. The writer looks upon this very fatal disease as being malarial in nature, *i.e.*, it can only

occur in those who are either suffering from, or have recently become infected with, malaria, and that the disease is induced in these people most commonly, though not invariably by quinine. Quinine in malarial subjects seems to be able to produce hæmoglobinuria very readily, and the blackwater fever is very often a quinine hæmoglobinuria in a malarial patient. Therefore it is very essential to prevent a man from getting malaria, and this can be done by proper use of mosquito nets and prophylactic doses of quinine.

We can cordially recommend the volume.

"The Essentials of Histology, Descriptive and Practical, for the use of Students." By E. A. Schäfer, LL.D., Sc.D., F.R.S. Seventh edition. London: Longmans, Green and Co., 1907. Price 10s. 6d. net.

The present edition of Professor Schäfer's work on histology for students has been considerably enlarged, partly by additions to the text—especially that descriptive of the central nervous system—partly by the provision of new illustrations. A new feature is the printing of many of the illustrations in colour, which will certainly give a better idea of the appearance of the stained preparations. We have nothing but praise for this new edition of an excellent book. The illustrations are as good as any that we have seen in medical or scientific literature, and it is a great pleasure as well as a source of much instruction, to study them, not only for the student, but for a qualified medical man.

The letterpress, divided into fifty lessons, is also first rate, the descriptions and instruction being given in clear and concise terms. We can strongly recommend the work, believing that no better work in the essential histology is published in any language. It is of a very handy form, of excellent type and general finish.

"The Medical Annual, 1907." Twenty-fifth year. Bristol: John Wright and Co., 1907. Price 7s. 6d.

This annual publication maintains its high character. It places in the hands of the practitioner a summary of the advances made in medical knowledge throughout each year, and in many instances, when dealing with subjects of more than usual interest, an excellent review is afforded of current opinions. Dr. Batty Shaw has written an admirable account of the Ductless Glands, and Dr. Robert Hutchison is responsible for numerous articles on general medicine, including several pages on Gout and on Examination of the Fæces. The book is kept well up to date, for we note that Dr. Grainger Stewart's articles on Frontal Tumours, although only published in November, are here summarised. The surgical articles are made lucid by numerous illustrations, the stereoscopic photographs of operations on the frontal sinus being particularly good. We feel assured that this book will continue to enjoy the wide popularity it has already attained.

"Immediate Care of the Injured." By Albert S. Morrow. Philadelphia and London: W. B. Saunders and Co. Price 12s. net.

The author of this volume attempts an impossible task, aiming at a book suitable at once to medical men, nurses and laymen.

In Part I. a complete and accurate account of human anatomy and physiology is given, profusely illustrated by diagrams, which cannot fail to be of interest and value to laymen; to medical men it is of course superfluous.

In Part II. the author gives an excellent description of bandages, dressings, etc., with many practical hints in methods of application.

In Part III. a detailed account of accidents and emergencies is given; too much time, however, is devoted to after-treatment and too little stress being laid on first aid.

It appears to us dangerous to explain the methods of reduction in cases of fracture or dislocation; in both cases the diagnosis is frequently a matter of difficulty even in skilled hands, and an enthusiastic ambulance man, in attempting this, might do serious and irreparable damage.

It is only fair to Dr. Morrow to explain that in his preface and elsewhere he emphasises the necessity of summoning medical aid on practically all occasions, but he does not appear to make it clear that laymen should cease their efforts after rendering first aid.

The chapter on artificial respiration and the section on transportation of the wounded are both excellent, and well in keeping with the object of the book.

The chapter on poisons is too advanced for laymen, and medical men have other sources of this information at their disposal.

On the whole the book is clearly written and well illustrated, and could be recommended to people likely to be out of reach of medical aid, such as missionaries or travellers, but we should not consider it advisable to place it in the hands of the ordinary layman.

"Le Ghiandole Paratiroidee." By A. Pepere. 28 × 19 cm., pp. 325, with 5 plates. Turin, 1906. Price 10 lire.

In this large and handsome volume the author has brought together what is known about the embryology, anatomy, physiology and pathology of the parathyroid glands, which he has been studying for seven years. There are four of these glands; the external pair was discovered by Sandström in 1880, while Nicholas, and also Kohn (who called them the "epithelial bodies" in 1895), drew attention to the internal pair (the superior pair in man) some years later. Parathyroid insufficiency in man has not yet been widely studied; but Pepere is strongly of the opinion that it is at the root of many cases of infantile tetany, of eclampsia, and of the fits occurring in the children of goitrous families, while the tetany occasionally observed after operative removal of the thyroid gland—and of the parathyroid with it—has repeatedly been attributed to the lack of the parathyroid glands.

In man, the external parathyroids are small, rounded, flattened masses, in size up to half an inch long and a quarter of an inch in diameter, close to or embedded in the inferior part of the posterior aspect of the lateral lobes of the thyroid gland, or they may be in contact with the inferior thyroid arteries, from which they draw their blood supply. They are lobulated and encapsulated by fibrous tissue. Microscopically, they show great variety of structure. Masses of gland-cells, gland-cells in a network, columns, or alveoli, and follicles containing colloid matter, are all normal; while the amount and disposition of the fat, blood-vessels, and fibrous tissue, all vary widely in different parathyroids, or even in different parts of the same parathyroid gland. But certain authors have classified these glands into numerous types according to their minute structure. Embryologically speaking, the external parathyroids are derived from the dorso-cranial wall of the third entodermic pouch, and the internal from the fourth; others hold, however, that they are derived from the thymus and the lateral part of the thyroid gland respectively, with which they undoubtedly are closely connected in the human fœtus.

In man, four parathyroids are usually to be found. The upper (or internal) pair is very generally closely connected with the thyroid; the lower (or external) parathyroids may be found as much as an inch below the thyroid, and they may even be closely connected with the upper part of the thymus. In 122 cadavers, Civalleri (1902) never found less than 4 parathyroid glands; in 41 cases he found 5 or more of them. They are often hard to discover; the upper parathyroid is to be found deep to the point where the inferior larngeal nerve crosses the inferior thyroid artery. The lower parathyroid is always ventral to this artery. The staining reactions and minute histology of parathyroid cells are described in detail; it may be noted that the cells are never seen to proliferate, or to attempt to repair any loss of parathyroid tissue. The general structure of the glands probably varies with the age of its possessor.

Coming to his own experiments, Pepere finds that extirpation of the parathyroids in the dog is much more rapidly fatal than is removal of the thyroid glands; death occurring in a day or two with convulsions. He could not observe any connection between the presence or absence of the parathyroids and the course of various bacterial infections in the animals, and argues that the glands therefore have no antitoxic action as far as such infections are concerned. He was able to transplant the parathyroid in the dog with success, and found that such transplanted glands enabled the animals to survive the removal of their own parathyroids for a considerable time. Different races and varieties of rabbits show very various sensitiveness to removal of the external parathyroids; the internal pair of these glands is much smaller, and is so wrapped up in the thyroid as to be beyond the reach of operation. Transplanted parathyroids take root and last better in the rabbit than in the dog, and prolong the rabbit's life when the operation of thyroparathyroidectomy is subsequently performed. In both dogs and rabbits the glands persist longer after transplantation if

the animal is in physiological need of their internal secretion, and show histological evidence of much secretory activity, but none of cellular regeneration. Pepere thinks that there is evidence that the condition of pregnancy is associated with unusual activity on the part of the parathyroid glands.

In the human fœtus the parathyroids develope earlier than the thyroid gland does, and exhibit several varieties of histological arrangement; no colloid is to be seen in them. At the age of 3 or 4, small globules of fat first appear in the parathyroid cells, and colloid collections are rarely seen. In the adult, Pepere has found fewer than four parathyroids in less than 1 per cent. of the cadavers (over 1,000) he has examined; anomalies by excess are far commoner, and he has met with as many as eight or even nine in one person. The amount of interstitial fat increases steadily with age.

In adults, the gland cells proper exist in three main types—(*a*) the more permanent rounded, clear, non-granular "fundamental" cells, in masses or columns, forming the bulk of the glands. (*b*) The characteristic oxyphil or chromophil cells, usually twice as large as the fundamental cells, and occurring isolated or in larger or smaller masses throughout the gland; Pepere describes all the stages by which a fundamental cell passes into a chromophil, and a chromophil cell passes back again into a fundamental, and how both types may secrete colloid material. (*c*) In some cases the fundamental cells develope into voluminous cylindrical or prismatic hyaline cells forming the walls of tubules; these secrete a hyaline substance. Pepere does not believe that the fundamental cells represent cells in repose, as Benjamins (1902) and others have argued. There is no evidence that the glandular activity of the parathyroids lessens in old age. Numerous very minute islands of parathyroid cells may often be found scattered in the connective tissues and fat of the neck round about the parathyroid glands proper, and quite apart from them. The parathyroid colloid is a secretion, and not a product of degeneration, as is the thyroid colloid; the intracellular fat is not produced by degenerative changes either, and the cells often contain glycogen granules. The gland contains much elastic tissue, and often a quantity of unstriped muscle in its capsule as well. Both within and without the glands remains of parathyroid ducts, ending blindly, may at times be found, lined with ciliated epithelium.

Pepere devotes 80 pages to the numerous pathological changes that have been seen in the parathyroid glands in various conditions of disease, but the data so far obtained do not enable him to draw any very definite conclusions as to the symptoms produced by disease of the parathyroid glands *per se*. He is led to conclude that much ambiguity still attaches to the share taken by parathyroid disorders in the production of symptoms of disease. Tetany and convulsions no doubt do often occur when the parathyroids are absent, defective or abnormal, but not always. The volume ends with 25 illustrations and an extensive bibliography.

A. J. Jex-Blake.

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THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

ALBUMINURIA OF ADOLESCENCE.

BY

W. B. Heywood, M.D. (Cantab.).

Abstract of a Thesis awarded the Degree of M.D. (Cantab.).

It has been stated by some writers that proteid is normally present in the urine, and that it can be detected in the urine of every person if the tests applied be sufficiently delicate.[1] Others hold that, although normally present, the urine of certain persons will be found to be absolutely free from it.[2] Whether the truth lies with either of these views or not, it is certain that normal urine does not give a proteid reaction under ordinary tests.

The various forms of serum albuminuria in the apparently healthy young may be tabulated as follows:

1. Constantly present. A. With cyclic variations
   B. Without cyclic variations.
2. Occasionally present.
   A. Transitory. Single occasion.
   B. Many occasions.
      i. Regularly periodic or cyclic.
         a. Permanent. (1) Daily cyclic.
            (2) Orthostatic.
         b. Intermittent, with periods more or less long of freedom from albuminuria.
      ii. Irregularly occurring.

The type of albuminuria tabulated above as 'transitory' does not appear to be more common among the young than among those of mature years.

The causes of transitory albuminuria may be tabulated as follows:

1. Severe and prolonged exertion.
2. Cold bathing and exposure to cold.
3. Dietetic albuminuria.
4. Neurotic from overwork, excitement or nervousness.[3]
5. Poisoning by sewage and by certain drugs as carbolic acid, turpentine, cantharides, lead, mercury, phosphorus, alcohol, etc.

Quite recently, Collier [4] has published some remarkable figures proving the extreme frequency with which albuminuria follows severe and prolonged exertion. Macfarlane[5] and Granger Stewart[6] have also drawn attention to this fact. By the latter [7] exposure to cold is not considered to be a common cause of albuminuria. Albuminuria may follow the ingestion of certain kinds of food, or of any kind of food, or of any food which is not properly digested, or it may occur only when exercise follows immediately on the ingestion of food.[8]

The other forms of albuminuria, which may be classed as non-transitory, are very common among the young. Dukes [9] and Armstrong [10] state that fifteen or sixteen per cent. of school boys pass albuminous urine frequently. Some authors [11] give even higher percentages; of 223 cases of cyclic albuminuria quoted by Mix [12] and Sutherland [13] eighty per cent. occurred in those under twenty years of age.

Various hypotheses have been put forward to account for this condition.

(1) Hawkins [14] and Dukes [15] hold that the fault lies with the vaso-motor mechanism regulating the blood flow in the renal glomeruli. The nervous system has been proved by Claud Bernard and others to be intimately connected with the absence of albumin from normal urine. Clinically in certain diseases of the sympathetic system albumin is found in the urine.[16]

(2) Dickinson [17] held that masturbation was the chief cause.

(3) A moveable kidney has been stated by some writers [18] to be a frequent cause. Teissier [19] however declares that the vast majority of cases of moveable kidney never have albuminuria.

(4) Ribbert [20] holds that the albuminuria of adolescence is due to a temporary return to an embryonic type on the part of the kidney.

(5) Moxon [21] held that crystals of oxalate of lime induced renal irritation and consequently albumin appeared in the urine. Sir Andrew Clark [22] considered that the majority of cases of albuminuria occurring in young men fell into the group of oxaluric albuminuria. Sutherland [23] and Holt [24] believe that the uric acid diathesis is an important factor in the production of albuminuria. The ingestion of rhubarb to an extent sufficient to produce oxalic crystals in the urine gives rise to albuminuria.[25]

(6) Lessened coagulability of the blood is believed by Sir A. E. Wright [26] to be a prime factor.

(7) George Johnson [27] held that most cases of intermittent albuminuria could be traced back to an acute nephritis. Vaquez,[28] Limossier,[29] Mix[30] and Senator[31] agree with this opinion. Many[32] hold that all these cases are early stages of chronic nephritis, whether acute nephritis has preceded the appearance of the albuminuria or not.

In addition to the hypothesis given above there are three others which have been advanced to account for the orthostatic type of albuminuria.

(1) "Raynaud's disease" hypothesis.[33] The upright position causes sudden anæmia of the glomerular circulation by the large call of blood to the periphery and vascular spasm. Then follows a sudden inflow of blood on the re-establishment of the circulation following the vascular spasm, and an excessive filtration of dissolved substances or serum through the incompletely developed renal tissue.

(2) Mechanical hypothesis.[34] The upright position causes increased blood pressure in the kidney. That increased blood pressure is not of itself capable of producing albuminuria is proved by the fact that increased arterial pressure lessens the amount of albuminuria; and that ischæmia of the kidney following the partial occlusion of the renal artery increases it. Slowing of the blood stream is a common factor in both these conditions; consequently slowing of the blood stream instead of increased pressure is held to be the efficient cause.

(3) Pulse pressure hypothesis. Erlanger and Hooker [35] carried out a series of experiments to discover what effect the alteration of the general blood pressure, and consequently presumably of the

renal blood pressure, had on the output of albumin by the kidney. Two healthy young men, of whom one was affected with albuminuria in its orthostatic form, while the other passed normal urine, were the subjects of the experiments. In the experiments the maximum and minimum blood pressure, the pulse rate and the pulse pressure were noted. Attention was first turned to the question as to whether increased pressure in the kidney veins, brought about by the erect posture, produced albuminuria. By means of a suitable apparatus the subject continued to breathe for some time air under a pressure equal to that of a column of blood 13 cc. high. Neither while lying down nor while sitting up did albumin appear in the urine. Suspension in the vertical position, both in air and in water, in such a way as to prevent all muscular exertion was found to be unassociated with albuminuria.

These experiments proved that, at any rate for this subject, increase in the pressure of the blood in the veins of the kidney did not produce albuminuria. They also suggested that the muscular exertion, which is necessary to keep the body erect, is in some way the cause of albuminuria. That such muscular exertion is not of itself a sufficient cause is proved by the fact that the subject could support himself for a lengthened period of time, resting in the horizontal position on two straps, one under the shoulders and the other under the ankles, without any albumin appearing in the urine. Other authors have noted the absence of albuminuria following exertion in the horizontal position. From an examination of the effects on the vascular system of the erect position, and of muscular exertion in the horiontal position, it was found that they were essentially different. Muscular exercise generally increased the blood pressure, but always increased the pulse pressure and the pulse rate. The erect position caused a rise in the minimum, and as a rule no alteration in the maximum blood pressure; the pulse pressure was invariably diminished and the pulse rate increased. Muscular exercise increased the amount of urine, but when not excessive did not give rise to albuminuria. The velocity of the blood stream was found to be increased by exercise, but to remain constant under postural changes. No relationship could be traced between the maximum and minimum blood pressure, or the velocity of the blood stream, and albuminuria. Diminution

of the pulse pressure, however, was found to be invariably followed by the appearance of albumin in the urine. It was also proved that the erect posture, when unassociated with a diminished pulse pressure, did not give rise to albuminuria. The experiments, as to the effects of baths at various temperatures, and of the ingestion of food, also bore out the close relationship between the pulse pressure and the appearance of albumin in the urine. It was found that the pulse pressure increased throughout the day; this harmonizes with the well known fact that albumin tends to disappear from the urine towards evening, even if the erect posture be maintained all day. The amount of albumin was found to vary inversely, and that of the urine directly, as the pulse pressure. To sum up, it appears to be proved that in this case of orthostatic albuminuria, the pulse pressure is an important, though not necessarily the only, factor in the production of albumin in the urine. It is possible that some intermittent forms of albuminuria are due to cyclic vascular changes; only in these cases they are not diurnal or affected by posture, but are due to conditions of the pulse pressure, which occur at definite lengthened periods in a cyclic manner.

The last three hypotheses are attempts to solve only half the problem. Given a peculiar and abnormal kidney, they explain the presence of albumin on certain occasions, and its absence on others; but they do not attempt to define how the kidney which secretes albuminous urine differs from the kidney which does not.

Following certain *specific fevers* we find albuminuria in all its forms. This is especially the case with regard to scarlet fever. Cases of orthostatic, intermittent, cyclic, acyclic and persistent albuminuria following scarlet fever are on record. In considering those cases, in which a history of scarlet fever, diphtheria or nephritis from some other cause cannot be obtained, we must remember that many children pass through mild attacks of scarlet fever or diphtheria without medical treatment and without the disease being recognised. That quite mild attacks of scarlet fever are often followed by nephritis is generally conceded. Goodall and Washbourn [36] indeed assert that there is no relation between the character of the attack of scarlet fever and the occurrence or severity of a subsequent nephritis. With a view to discovering the frequency and character of residual albuminuria I examined the

urines of thirty-nine children, all of whom had suffered from scarlet fever. They were all apparently perfectly healthy. In at least thirty-six cases there had never been any anasarca or symptoms of uræmia; of the character of the attacks in the remaining three cases (Nos. 6, 25, 30) I have no certain knowledge. In twenty-one cases the urine was examined at some period during the first year following the freedom from isolation; in fifteen cases the interval was from 1—3 years and in three cases over 3 years. The ages ranged from 3—18 years. Twenty-one patients were females and eighteen males. No case was tabulated as albuminuria unless a positive reaction was obtained with both the cold nitric acid and the heat and acetic acid tests. The urinary sediment was obtained by means of a centrifugal machine.

In the following table the sex, age and time in years after recovery at which the examination was made are given.

1	F	10	1	Serum albumin constantly present; trace first thing in the morning, 0·1% to 0·2% at midday. Few blood corpuscles and epithelial cells but no casts discovered. Sp. gravity usually about 1015.
2	F	$8\frac{1}{2}$	1	Serum albumin absent on rising; slight sediment on boiling at midday. Few blood corpuscles and epithelial cells but no casts discovered. Sp. gravity 1010—1015.
3	M	10	2	No albumin found.
4	F	11	3	No albumin found.
5	M	$8\frac{1}{2}$	$2\frac{1}{2}$	Nucleo-albumin and serum albumin present together. Orthostatic type. Calcium oxalate crystals present. Few urinary cells but no red corpuscles or casts found. Sp. gravity usually over 1020. Albumin varied in amount from trace up to about 0·15%.
6	M	7	9	Serum albumin and nucleo-albumin present together. Orthostatic type. Calcium oxalate crystals present. No cells, corpuscles or casts found. Sp. gravity usually 1025—1032.
7	M	$9\frac{1}{2}$	$2\frac{1}{2}$	No albumin found.
8	M	7	1	No albumin found.
9	F	$15\frac{1}{2}$	$\frac{1}{2}$	No albumin found.
10	M	$6\frac{1}{2}$	$\frac{1}{2}$	Nucleo-albumin found occasionally.
11	M	13	$^1/_{12}$	Serum albumin absent at rising, present midday, about 0·05%. Sp. gravity 1016—1025. No cells, corpuscles or casts found.
12	F	$13\frac{1}{2}$	$2\frac{1}{2}$	Serum albumin and nucleo-albumin present occasionally. Sp. gravity usually about 1020. No cells, corpuscles or casts found.

13	M	12½	½	Serum albumin and nucleo-albumin present midday, but not on rising. Sp. gravity 1015—1020. No cells, corpuscles or casts found.
14	F	14	1/12	Nucleo-albumin present on rising. Serum albumin and nucleo-albumin present midday up to 0·4%. Blood corpuscles, renal cells and granular, hyaline and epithelial casts found. No pus or crystals. Sp. gravity about 1020. No anasarca or symptoms of nephritis during the attack of scarlet fever.
15	F	3	1	No albumin found.
16	F	5½	½	No albumin found.
17	F	9½	½	Slight trace of serum albumin found once. Sp. gravity 1015. No cells, corpuscles or casts found.
18	M	12	3	Serum albumin and nucleo-albumin present together. Orthostatic type. Calcium oxalate crystals. Few blood corpuscles, renal cells and hyaline casts found. Sp. gravity usually over 1020. Albumin 0·05% or less in amount.
19	M	5½	½	No albumin found.
20	F	3	1/12	No albumin found.
21	M	9½	½	No albumin found.
22	F	3½	½	No albumin found.
23	F	8½	½	Serum albumin found occasionally. Sp. gravity 1012—1020. No cells, corpuscles or casts found.
24	M	3½	½	Serum albumin found occasionally in very slight traces.
25	M	8	5	No albumin found.
26	F	5½	2½	Serum albumin and nucleo-albumin present together. Orthostatic type. Albumin up to 0·1% in amount. Calcium oxalate crystals present. Few blood corpuscles and urinary cells but no casts found. Sp. gravity over 1020.
27	F	12½	½	Serum albumin present midday, but not on rising. Sp. gravity 1020—1028. No corpuscles, cells or casts found.
28	M	7	½	No albumin found.
29	M	5½	½	No albumin found.
30	M	12	6	No albumin found.
31	F	13½	½	Slight trace of serum albumin present midday; no albumin on rising. Sp. gravity 1020—1028. No cells, corpuscles or casts found.
32	F	6	½	No albumin found.
33	F	4	¾	Nucleo-albumin present on rising. Serum albumin and nucleo-albumin present at midday. Sp. gravity 1015—1025. No cells, corpuscles or casts found.
34	M	3½	½	No albumin found.
35	F	7	½	No albumin found.

36	M	14	1	Nucleo-albumin present on rising. Serum albumin and nucleo-albumin present at midday. Sp. gravity about 1020. A few epithelial cells but no casts or corpuscles discovered.
37	F	9	1	A slight trace of nucleo-albumin found occasionally.
38	F	5	1	No albumin found.
39	F	11	1	No albumin found.

Albumin was present in the urines of nineteen of the cases tabulated above. In two of these nucleo-albumin alone was found. Eleven of the patients were females and eight males. The average age of the albuminuria patients was 11 years and of the others 9 years. The average ages at which patients contracted scarlet fever were respectively $9\frac{1}{2}$ and $7\frac{1}{2}$ years.

Types of albuminuria present.

1. In four cases the albuminuria seemed to be of the true orthostatic type. In all these cases lying down invariably caused the albumin to disappear from the urine. Ingestion of food and exercise in the horizontal position did not cause albuminuria. Shortly after the erect posture was assumed the urine became albuminous.

2. In five cases the albuminuria was of a cyclic type but not orthostatic. Serum albumin was present at or before midday, but absent first thing in the morning. Towards evening it disappeared or declined very much in quantity.

3. In three cases serum albumin was present as in the last class. Nucleo-albumin was, however, present on rising.

4. In one case serum albumin was constantly present, but it was subject to cyclic variations.

5. In six cases the albumin appeared irregularly. In two of these cases nucleo-albumin alone was found.

Other characters of the urine.

The specific gravity was usually normal. In only four cases did it exceed 1025. No sugar was found in any case. In seven cases blood corpuscles, epithelial cells and hyaline casts were found. In only one case were there any granular or epithelial casts. Calcium oxalate crystals were present in the four orthostatic cases, and in no others. The amount of albumin varied from a slight trace to ·4 per cent. Serum albumin was found alone in nine cases, and associated with nucleo-albumin in eight.

Of the twenty-one cases examined during the first year following freedom from isolation ten suffered from albuminuria. In four of these the albuminuria was of the cyclic type (class 2). In two it was of the cyclic type (class 3) and in one nucleo-albumin was present occasionally. Of the fifteen cases examined during the second and third years eight suffered from albuminuria. In three of these cases the albuminuria was of the orthostatic type (class 1); in one of the cyclic type (class 2); in one of the cyclic type (class 3); in one case serum albumin was constantly present (class 4); in one nucleo-albumin and in one serum albumin appeared occasionally (class 5). Of the three cases, examined after the fourth year, one only had albuminuria. Of the seventeen children, who were seven years old or less when attacked by scarlet fever, five suffered from residual albuminuria. In one of these cases nucleo-albumin alone was found. Of the twenty-two older children, thirteen passed urine containing serum albumin. There was one case of nucleo-albuminuria in this class also. The percentages of serum albuminuria for these two classes are therefore 23·5 and 59 respectively. The following conclusions may be drawn from these examinations:

1. About 50 per cent. of children, who have passed through an attack of scarlet fever, suffered from residual albuminuia.

2. Residual albuminuria is not a purely transitory affection, as the percentage of albuminous cases is about the same for those tested during the first year and for those tested during the second and third years.

3. Early and late residual albuminuria do not differ much in type.

4. The younger the child is, when attacked by scarlet fever, the less liable is he to suffer from residual albuminuria.

5. Sex does not appear to affect the incidence of residual albuminuria.

Seeing that some 50 per cent. of children, who have passed through an attack of scarlet fever, suffer from residual albuminuria, the question arises, in what proportion of young scarlatinal patients does the presence of albuminuria during the attack indicate that the kidneys are more or less affected?

Transient albuminuria occurring during the first fortnight of

the attack is not considered by many to be of much importance. Béclère [37] is, however, of opinion that albuminuria should be carefully searched for during the early stages of scarlet fever, as it is due to streptococcus infection; and is a danger signal for complications—nephritis, joint troubles, etc.

During the last five years 66,871 cases of scarlet fever were treated in the hospitals of the Metropolitan Asylums Board. 13·67 per cent of these patients suffered from albuminuria. Rather less than one third of these are entered as nephritis and the remainder (9·5 per cent. of the whole number) as simple albuminuria.

That these figures are probably much too small is apparent from an examination of the statistics of the individual hospitals. Speaking generally the higher percentages for albuminuria occur each year in the same hospitals. In the same year we find that at one hospital the percentage is more than four times as large as that at another. For instance, in 1904, the percentage for albuminuria in scarlet fever at the Park Hospital was 27·4 and at the North Western 6·7. It must be assumed that either more frequent examinations are made, or more delicate tests are used, at one hospital more than at another. Traces of albumin found for less than three consecutive days were not recorded at the South Western Hospital.[38]

Grainger Stewart [39] and R. Stevenson Thomson [40] state that albuminuria occurs in 60 per cent. of all cases of scarlet fever. Welch and Schamberg [41] from their daily examinations of the urine in 150 mild cases give the percentage as 40·6. Roger [42] gives the percentage as 33·1 for 2157 cases. The intermittence of albuminuria in scarlet fever is a remarkable characteristic. It appears one day, it is gone the next; it may appear on three or four consecutive days, and then after an absence of variable length appear for a few days towards the end of convalescence; or it may be found for the first time several months after the primary infection.[43]

Many different opinions have been expressed as to the prognosis of albuminuria in children. Thus Broadbent [44] states that the albumin tends to disappear after a time, and that, as the condition is not one of nephritis, the outlook is good. Dukes [45] and Armstrong [46] agree that there is little likelihood of organic disease

making its appearance, even if the albuminuria lasts for years. Pavy [47] states that there is no evidence that the cyclic cases end in Bright's disease. Grainger Stewart [48] and Sutherland [49] agree that the prognosis is entirely favourable. Garrod [50] considers that when albuminuria appears in the orthostatic form it is *prima facie* evidence that it is the result of nephritis. Dickinson [51] states that the cases following infectious diseases often lead to granular kidney; Teissier [52] gives the percentage of such cases as twenty. Welch and Schamberg [53] state that the number of these cases passing on to permanent nephritis has been much underestimated. Roger [54] says that those following infectious diseases too often pass into a chronic state. Mix[55] and Senator[56] give a very guarded prognosis in these cases.

Conclusions.

About 50 per cent. of children attacked by scarlet fever suffer from residual serum albuminuria, in the majority of cases of a cyclic type.

About 50 per cent. of patients attacked by scarlet fever suffer from serum albuminuria during the course of the disease. The absence of a history of scarlet fever or other diseases often associated with renal trouble is not conclusive evidence that the patient has not suffered from such disease.

Assuming that all cases of albuminuria of adolescence are due to organic changes, either temporary or permanent of the kidney, the prognosis should not be considered to be in all, or even the majority of cases, grave. In each individual case there must always be much uncertainty.

We do not know to what extent the kidney is damaged, or what recuperative power it possesses. What we do know is this—The vast majority of cases of albuminuria in the young recover; the minority which include those cases in which granular and epithelial casts are found, remain unaltered or pass on to chronic granular nephritis.

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MENINGISM.

BY

FRANK E. TYLECOTE, M.D., D.P.H.,

Senior Assistant Medical Officer, Plaistow and Dagenham Hospitals; formerly Medical Registrar, Manchester Royal Infirmary.

MANY of those who are constantly observing children suffering from the specific fevers, must recognise from time to time the occurrence of symptoms of meningeal irritation of a slight and transient nature,—often somewhat loosely described afterwards by practitioners as "threatened meningitis." Similar symptoms have also been noted in cases of a more severe nature, where the disturbance in question has persisted for some time, and yet in the event of a fatal issue, the diagnosis of meningitis has not been confirmed by a naked-eye examination of the parts.

In the classification of this complex group of cases, a division into two sub-groups—functional and organic—appears to be the best. We will consider first the second or organic sub-group, as the cases coming under this head will require more careful sifting than the functional cases. Many minor forms of meningitis are comprised in it,—some being local, others general. They may or may not present naked-eye lesions, but, in the latter event, histological examination has sometimes shown quite definite signs of inflammation. In some cases of otitis media, complicating scarlet fever or acute eustachian catarrh, symptoms of meningeal or cerebral irritation occur, but in many of these cases no gross naked-eye lesion is found on operation or at autopsy. These cases are not due to the general circulation of toxins, but are possibly caused by an extension of hyperæmia from the inflamed area to the neighbouring structures.[32] They have been termed meningitis serosa. They are frequently accompanied by optic neuritis; there may be a great increase of intra-cranial tension, and lumbar puncture, with free removal of fluid, often gives relief. A somewhat similar condition may occur in erysipelas of the scalp or face, where meningeal symptoms may be due to three causes, acting

individually or in combination. Firstly, it has always been held that inflammation may pass inwards through the scalp to the meninges; secondly, Osler has recorded a case where he traced the extension from the face along the facial nerve to the meninges; thirdly, and most commonly, meningeal symptoms occurring in erysipelas are due to the circulation of toxins in the blood stream, so that the cases are not referable to the organic sub-group.

During epidemics of cerebro-spinal fever cases are often seen of a mild and transient nature, which are, nevertheless, in all probability pathologically a true meningitis, and which may yield the causative organism on lumbar puncture. In cases of mumps, meningitis occasionally occurs as a complication, and in nearly all the fatal cases meningeal symptoms have been prominent—though naked-eye lesions are rarely noted in post-mortem records. It would appear that the meningeal affections met with in mumps are sometimes organic, but more commonly functional.

Having thus taken into account the more common forms of minor organic affections of the meninges which may give rise to difficulties in diagnosis, we can the more readily consider the remaining group of cases, which besides including the functional meningeal condition met with in erysipelas and mumps as mentioned above, comprises also a similar state met with in scarlet fever, diphtheria, measles, influenza, typhoid fever and other infective diseases—a state occurring also in certain tubercular subjects, thus offering a probable explanation of many of the cases of tubercular meningitis which are recorded as cures.

It was to such a condition that E. Dupré in 1894 gave the term meningism, while other writers have used the alternative title of pseudo-meningitis. Several continental papers appeared in which cases were described, and the term was used. Some British text books accept the existence of the condition; but the scanty attention it has received from works written in the English language may be gathered from the fact that a recent large and authoritative American text book on infectious diseases does not even hint at the possibility of such a condition. Only one English book uses the term meningism.

Meningism may now be tentatively defined as a functional condition caused by the selective action on the meninges and cere-

bral cortex of the toxins which are circulating in the blood stream in the above diseases.

This definition will be seen to exclude the minor forms of organic affections above mentioned, but there is still another group of cases, which one would not hesitate to call cases of meningism but for the fact that, although they occur in the same diseases as meningism and give rise to the same symptoms, they differ in one respect—the cerebro-spinal fluid shows a marked lymphocytosis; in this small group the possibility of a minor and probably microscopical degree of organic change cannot be denied.

Now that lumbar puncture is so well recognised as a diagnostic agent, we can resort to this measure as an aid to the differentiation of cases of meningism from those of true meningitis; for it must be admitted that in many cases the clinical signs are in this respect of little service.

I shall show in some of the cases quoted below that the symptoms of meningism are occasionally relieved by lumbar puncture. Amongst other conditions relieved by lumbar puncture Purves Stewart has recorded cases of tubercular meningitis in a comatose state where the coma was temporarily relieved, and cases of uræmia are also on record in which this procedure has benefitted the patient.

Clinical Features.

The most constant sign met with in meningism is that of retraction of the head. When this retraction occurs at the onset of an acute infective disease in which there is some congestion and swelling of the tonsils and of the region of the pharynx, it must be distinguished from a retraction which often accompanies such swelling, and which is an attempt on the part of the small patient to obtain by such alteration in the position of his head and neck, a freer route for the passage of air to the lungs. In this latter condition, however, there is no rigidity of the neck muscles.

Retraction of the head is variable in its degree and also in its duration; it may last continuously for a day, or even several, without there being any organic lesion present, or it may come and go, for some time in the earlier stages of the infection. In

the better marked cases opisthotonos is not infrequently present with it, even to the extent of simulating a typical case of strychnine poisoning.

The presence or absence of pyrexia does not seem to influence the symptoms. In diphtheria, in which meningism is perhaps commoner than in most infections, and in which its occurrence is usually associated with other signs of profound toxæmia, the temperature is not often raised above the normal (see case ii.).

The child usually lies more or less on his side with legs drawn up and arms flexed, though occasionally he may be found lying on his back. We are usually told that in cases of typhoid fever, where meningitis is rare, if the patient has meningitis he lies not in the usual position for an enteric patient—supine and low in the bed—but on his side curled up, yet in a case recorded below, a typical one of meningism in typhoid, the position was the lateral one, with knees and elbows drawn up.

Extreme restlessness and irritability, increasing on disturbing the patient is the rule; there may be a well marked hydrocephalic cry, and in some cases the child screams or whines incessantly. Rigidity, headache, twitchings, and even slight convulsions may occur. Kernig's sign is, as far as the writer's experience goes, absent in all cases.

The differential diagnosis of meningitis from meningism is at times of the greatest difficulty, and the result of lumbar puncture, which is considered later, is of the utmost value in this connection.

The other points in the differential diagnosis may be summarised as follows:—

1. In the acute infections meningism is often, but not always, early in its occurrence and of short duration. These points do not hold good in the more chronic conditions such as tuberculosis, where it may appear at any time and last any length of time.

2. Kernig's sign is as a rule absent in meningism, but is also absent in some cases of tubercular meningitis, and present in some healthy people.

4. Pyrexia is more often absent in meningism than in meningitis.

4. The coincident presence of opisthotonos is a point in favour of meningism.

5. The effect of lumbar puncture is probably more often beneficial in meningism than in meningitis.

6. The frequent recurrence of symptoms of meningeal irritation after temporary relief has been afforded by lumbar puncture is in favour of an organic lesion.

7. Marked involvement of individual cranial nerves is strongly in favour of meningitis.

8. The occurrence for the first time in the defervescent or convalescent stage of an *acute* infective disease of symptoms of meningeal irritation is very much against meningism.

9. The onset of meningism is an acute one, whereas meningeal symptoms in a case of developing meningitis usually come on gradually.

10. When the symptom-complex meningism is established it usually remains of stationary severity until the symptoms begin to decline—there is as a rule neither gradual increase in, nor ebb and flow of, the intensity of the symptoms, one of which conditions one usually gets in meningitis: any such variation in the intensity of symptoms favours an organic lesion.

11. Hyperæsthesia and tâche cérèbrale are more frequently met with in meningitis than in meningism.

12. Absence of marked diminution of the body weight during the period of the meningeal symptoms (whatever loss of weight there may have been before) is in favour of meningism.

13. In fevers the absence of a predisposant to meningeal infection such as trauma or otitis, or of family history of tubercle, or of its presence in the patient, favour meningism.

14. Slowing of the pulse and irregular respiration, so common in meningitis, are rare in meningism.

Literature.

Some of the cases recorded in the literature as cases of meningism will now be summarised, and it will be at once evident that the term has been employed rather loosely by some of the authors. The absence of any reference to lumbar puncture in many of the cases cited is explained on reference to the appended list of refer-

ences, from which it will be seen that they occurred before this procedure had become generally known.

Comby [4] refers to the record by Schoull of 13 cases of tubercular meningitis with six cures—probably all examples of meningism, and then records four cases of meningism which may be summarised. Case I. followed influenza and was possibly pneumococcal; the child was a male, aged 4, he had hyperæsthesia, retracted head, and he cried when disturbed. It is mentioned that his urine gave a thick layer of urea nitrate crystals on adding nitric acid. Antipyretics, ice and milk diet were tried with no effect. He got better in a week, and the urine became normal. Case II. was a female child, aged 14, whose father had died of phthisis. She was almost absolutely comatose, had a hydrocephalic cry, was constipated, and had retracted head, irregular pulse and respiration, and some pyrexia. Tubercular meningitis was diagnosed, but in 14 days the girl was quite well again. Case III. was a boy of 12½; following influenza suspicious symptoms came on, and the question of tubercular meningitis was considered, but after an illness of several weeks, a perfect recovery followed. Case IV. was a boy of 9 years. In his case meningism followed influenza and broncho-pneumonia; he was very restless, he vomited and was much emaciated. Tubercular meningitis was diagnosed, but recovery followed.

Ollivier [18] reported a case of false tubercular meningitis in a child of 5 years, which was evidently of hysterical nature, and recovered. Sevestre[17] reports two cases complicating influenza, the children were aged 7 and 4 respectively, and both recovered. Roesch [16] (thèse de Paris) has recorded 18 cases.

Marty [23] records a case, to which he applies the term spinal meningism, in which associated with rheumatism there was hyperæsthesia of the legs, increased on the least movement, also pain in the lumbar region. The temperature was normal.

Among the hysterical cases on record is one by Mery and Courdoux [24] in which they performed lumbar puncture with the idea of excluding meningitis; the fluid was normal. The operation gave instant relief and the patient has had no further attacks.

Meningeal symptoms arising in the course of influenza have formed the subject of the papers, of which a few will be cited.

Gendre and Terrien [20] record the case of a patient whom they knew as being possibly tubercular, who, in the course of an attack of influenza developed meningeal symptoms with a pure lymphocytosis; in this patient recovery followed some days after lumbar puncture, so they maintain that even in such suspicious cases there is no need to rush to the conclusion that one is dealing with a case of tubercular meningitis.

Riccardo Curti [27] also is of the opinion that it is not rare in influenza and gives two cases. The first was 4½ years old and had also delirium, headache and a high temperature; the other case was 8 years of age. The symptoms began on the sixth day; the temperature was very slightly raised, the child had a bad headache, somnolence, squint, fibrillary twitchings, low tension pulse, incontinence of urine; these all passed off after two days and cure followed. He regards the condition as due to irritation by toxins which, if it passes certain limits, will cause death.

Bouchut,[15] in his well known manual on diseases of infancy, counsels that the condition should not be confused with hydrocephaloid, while he is of opinion that the question of true or false meningitis is only one of degree. He thinks the difficulty of differentiating it from tubercular meningitis may be avoided if one remembers that there is no preliminary or incubation stage in meningism, while as a rule it is very different in tubercular meningitis, and meningism is usually met with at the *onset* of fever.

Nobecourt and Voisin,[13] writing on meningeal symptoms occurring in pneumonia and broncho-pneumonia, consider that the symptoms vary with the activity and number of the germs and their toxins, and also according as there is or is not on the part of the nerve cells a predisposition, hereditary or acquired, to meningeal infection.

Gilles de la Tourette [25] believes that meningism is always hysterical, while Hutinel,[26] on the other hand, denies that it is ever so, but is always associated with enteritis and divers other infections in children. At the autopsies which he performed he found congestion of the meninges but no organisms, and therefore argues that the condition is due to toxins, the nature of which is unknown. Faisans says the condition is known to alienists and described by them as occurring in acute delirium and other conditions; he

maintains that similar symptoms can be produced by large hypodermic doses of creosote.

Pathology.

The only autopsy on record in detail is the case of Claisse [19] the post-mortem on which was performed and recorded by Berge.[14] This was a child of 4½ years of age whose illness began with all the symptoms of scarlet fever but who never showed any signs of desquamation. On the sixth day of illness she became almost comatose, there was the typical cry, retraction of the head, rigidity, constipation, albuminuria, a retracted abdomen, but no vomiting. She died on the 12th day of the disease. At the autopsy were found absolutely normal meninges and slight broncho-pneumonia. The cerebro-spinal fluid was abundant, clear and transparent. No growth was obtained on any of three tubes which were inoculated with it. The author regards these cases as a proof that pneumococcic meningism as well as pneumococcic meningitis may occur.

Achard and Paisseau,[21] discussing the apparent variance of the clinical and pathological evidence, believe that this is only apparent, as it is probable that the lesion is cortical and that the serosa are truly normal. They suggest that the lesion is exclusively cranial in those cases where lumbar puncture gives no relief, and say that the best guide to a definite differential diagnosis between organic and functional conditions is a minute clinical examination, paying especial regard to the slow pulse which occurs in organic cases. They recall the two cases of Chauffard and Boidin [22] in which meningism occurred in the course of mumps, and was associated with a well marked lymphocytosis which came and went with the meningeal symptoms, and which in one case was so marked that the fluid was quite turbid. The evidence is strong that lymphocytosis is a feature of meningism occurring in fevers, and so it behoves one to beware of diagnosing tubercular meningitis on the strength of this point, especially in cases of typhoid, where the accompanying emaciation and slow stage of incubation lend colour to this possible error.

Meningism in typhoid fever both at the onset and also occurring later in the disease has long been described under various terms;

in those cases which die of other causes Schultze has found on microscopic examination a small-cell infiltration round the vessels of the cortex and pia-arachnoid (*Verh. f. Kong. f. inn Med.*, v. 469).

Jean and Cardamatis [31] are of opinion that meningism and meningitis differ in their pathology only in the degree of severity of the meningeal infection; Nobecourt and Voisin [13] are in agreement with this opinion, and do not believe in the existence of functional meningism. Doennberger,[29] on the other hand, is of the opposite opinion, recognising a marked distinction between meningism (pseudo-meningitis) and meningitis as they occur in pneumonia.

We may summarise the information given by lumbar puncture in so far as it is of value in the differential diagnosis of meningism from meningitis as follows:—

1. *The fluid removed is clear and watery;* as a rule this is against meningitis and in favour of meningism, but in cases of tubercular meningitis and in the acute serous meningitis the fluid may be clear.

2. *The rate and force of the flow* is not of much diagnostic help, as increased tension is not essential in either condition, but evidence of increased tension with a clear fluid is an indication that the operation may be of some therapeutic value.

3. *Turbidity of the fluid, presence of more than a trace of albumen, absence of reducing power with Fehling's solution,* are all points in favour of a true meningitis. In tubercular meningitis as stated above the fluid may be as clear as water, but more often, especially in the later stages, it is slightly opalescent or becomes so on standing.

4. *Absence of growth* in cases where some of the fluid is inoculated on culture media is against meningitis, but in some cases of tuberculous meningitis no growth is obtained, and in typhoid fever growth of a bacillus from the cerebro-spinal fluid does not necessarily indicate meningitis. In cases of acute serous meningitis no growth will be obtained.

5. The remarks of section 4 as to growth apply also to the examination of *film preparations* made from the removed fluid—using, when necessary, the sediment obtained after centrifugalisation, in making the films.

6. *Cytodiagnosis:* the presence in the fluid of polymorphonuclear neutrophile leucocytes indicates the presence of an acute meningitis, while the presence of more than a few small mononuclear cells or lymphocytes suggests a subacute or chronic infection such as tuberculous meningitis. In cases of meningism no cells may be found, occasionally a few lymphocytes may be seen, just as they may be found in normal cerebro-spinal fluid (Sicard, Widal), while in several cases a lymphocytosis has been recorded.

The improvement noted in such cases as the undermentioned as following lumbar puncture is usually, for want of a better reason, attributed to lowered tension, but I do not regard this as a completely satisfactory explanation for the following reasons:—

(1) It lasts too long to be due to this cause if the reduction is merely directly due to the puncture.

(2) There is often no evidence of increased tension when the operation is done on the cases which turn out to be most benefitted —the fontanelle does not bulge and the fluid on spinal puncture only exudes slowly in drops.

If the lowered tension theory be adopted the absence of beneficial effect in any given case may be due to the fact that the foramen of Majendie is not patent, being often blocked by lymph in cases of diffuse meningitis.

If we consider further the cause of any good result which may follow lumbar puncture the following possibilities present themselves:—

(1) Does it affect the circulation by disturbing a pathological equilibrium, whatever the pressure—increased or normal?

(2) Does it reduce the total toxicity locked up in the cerebro-spinal fluid—parallel with the similar theory as to removal of toxins applied to uræmic bleeding? (The quantity removed would seem too small for this.)

(3) Is it possible that the cerebro-spinal fluid continues to drain through the puncture in the meninges and does this ameliorate by either of the two above mentioned methods or by keeping down the pressure? (Note the free flow of fluid in laminectomy cases).

(4) Does counter-irritation play a part in the alteration of the vascular equilibrium?

Now it has been shown that the brain and meninges have no

vaso-motor nerves, such alteration must be effected through the vaso-motor centre acting through the splanchnics. The low blood pressure which practically always occurs in these fevers means cerebral arterial anæmia with venous congestion of the brain; stimulation of and constriction of the splanchnics accelerates the arterial supply to the brain, raises the blood pressure, and in its turn diminishes the venous congestion. But L. Hill has shown that the venous pressure and the intra-cranial pressure are alike, or rather that what the one is the other very soon becomes by absorption through the veins—the relaxed venous pressure then in its turn relieves the intra-cranial pressure or pressure of the cerebro-spinal fluid, and a new equilibrium is produced.

Illustrative Cases.

Case I., male child, aged 18 months, suffering from diphtheria of larynx; history of a "tumble" 3 weeks before his attack of diphtheria. Within 36 hours of onset of laryngeal symptoms marked retraction of head and extreme arching of the back came on: slight convulsions. Fluid on lumbar puncture came slowly in drops, was clear, very slight pink tint, contained no organisms, a few red blood cells. Death occurred 46 hours later; during the interval there were occasional slight convulsions, but no retraction and no opisthotonos. Autopsy showed no signs of meningitis and none of any injury which might be ascribed to the supposed "tumble."

Case II., male child, aged 18 months, suffering from diphtheria, on third day of disease had marked retraction of head and opisthotonos, lasting about 24 hours, and then passing off. No further meningeal symptoms occurred; the temperature was normal at the time of the meningism. No lumbar puncture was done as the condition only lasted one day. Recovery followed without complications.

Case III., male child, 2 years old, father died of phthisis, child is suffering from phthisis, left upper lobe consolidated, is commencing to whine. Concatenate glands enlarged, occasional vomiting, foul stools, loss of flesh: as cry increased and got more suggestive lumbar puncture was done, fluid in all respects normal,

slightly increased pressure; improvement followed puncture as far as irritability was concerned, and child hardly ever cries now; examination of fluid and improvement in symptoms point against tubercular meningitis.

Case IV., boy, aged 10, suffering from typhoid fever; about the end of the first week he became very fretful and always cried if he was touched; this irritability increased and he now lay in the lateral position, with head bent and limbs flexed. On the 13th day of the disease, lumbar puncture was done under ethyl chloride; the fluid came so freely and with such force that about 12 cc. were removed. The child did not seem collapsed after this free removal of fluid, and from this time the mental condition was much better and the irritability gradually ceased; he made a good recovery. The fluid was clear and watery and contained some bacilli in many respects like Eberth's, but which would not clump with the patients blood serum, which gave a typical Widal reaction with the ordinary laboratory strain of this organism.

Case V., male, aged 10, typical case of typhoid, family history of phthisis on father's side. About the end of the first week of disease he began to shout and scream out incessantly. He lay on his side with his legs drawn up, and his arms flexed. This condition was associated with some retraction of the head and slight opisthotonos, and at times with general hyperæsthesia; lumbar puncture was, as the patient continued in this state, done on the 36th day of the disease at 4 p.m. The tension seemed normal, 10 cc. were removed and the pulse was not perceptibly weakened afterwards; he slept nearly all night, which he had not done for some time, and has not been noisy since. The fluid was absolutely clear, like water; it did not reduce Fehling's solution, and contained no albumen. Child recovered.

Case VI., boy, aged 4, clinically typical meningitis; lumbar puncture done to determine nature of infection; fluid clear, no organisms found; diagnosis of probable tubercular meningitis confirmed on post-mortem examination. In this case the operation apparently gave no relief (the notes are unfortunately incomplete) but this was, on the whole, in favour of an organic lesion, while

the character of the fluid tended to exclude purulent meningitis and favour the diagnosis of the tubercular form.

Case VII., boy, aged 3, meningitis following scarlet fever, family history of tubercle on mother's side; well marked hydrocephalic cry and frequent convulsions. Lumbar puncture was done, clear fluid was drawn off under about normal pressure (2 dr. removed) child only screamed if disturbed now and had no convulsions afterwards. Nine days later child was moribund and fluid on a second puncture gave same characters. P.M. refused, but case almost certainly tubercular—this borne out by characters of fluid and by family history; case interesting as shows good effect of puncture on symptoms.

In view of the prevailing epidemic of cerebro-spinal fever it may be useful to give in tabular form a list of *points favouring a diagnosis of meningism, when the diagnosis lies between this and epidemic cerebro-spinal fever*:—(1) the absence of an epidemic of cerebro-spinal fever at the time, (2) meningeal symptoms were not the first noted signs of illness, (3) absence of the causative organism in the cerebro-spinal fluid, (4) the presence of signs or symptoms of another infection, (5) no involvement of cranial nerves, (6) no Kernig's sign, (7) absence of violent headache, (8) absence of a very high temperature, (9) a not very rapid course, (10) no rash, (11) no coma ensues, (12) history of similar previous attacks (hysterical form).

Lumbar puncture has been recommended in cerebro-spinal fever, in which disease good results have been recorded after repeated puncture to relieve pressure.

Acute serous meningitis (Quincke [10]) may give rise to similar symptoms, and the cerebro-spinal fluid have similar characters to those met with in meningism, but this peculiar condition usually occurs in adults instead of in children is unassociated with fevers, and may last a very long time, so that a diagnosis of cerebral tumour is often made.

I am indebted for much kindly help in connection with this paper to my superintendent, Dr. Biernacki, and also to my colleagues, Drs. Emil Schwarz and L. F. Hirst.

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STRANGULATION OF THE VERMIFORM APPENDIX IN A HERNIAL SAC.

BY

PHILIP R. WRIGLEY, F.R.C.S. (Eng.),
Resident Surgical Officer, Royal Infirmary, Manchester.

THE vermiform appendix is frequently one of the contents of a hernial sac being present, according to some authorities, in from one to two per cent. of all herniæ. In infants and young children it is quite a common event to find the cæcum and appendix in a right inguinal hernia.

It has been met with on two or three occasions in the sac of an umbilical hernia and in one case in an obturator hernia.

The appendix may be alone in the sac or may accompany cæcum, small bowel, or omentum. Statistics shew that 70 to 80 per cent. of the cases occur in inguinal herniæ, while 20 to 30 per cent. are in femoral hernia. The presence of the appendix may be congenital or acquired.

If congenital, its position is believed to be due to adhesions between the appendix and the peritoneum over the testis formed during fœtal life; this variety only occurs in right sided herniæ.

In acquired cases undue mobility of the cæcum and the appendix probably play a part; Eccles found that in a large number of these cases, the appendix was recorded as being abnormally long.

When present in a hernia on the left side its situation may be explained in some cases by developmental reasons and in others by enteroptosis, long mesocæcum, and the ordinary causes of hernia.

A herniated appendix is liable to certain complications:

(1) It may become irreducible in virtue of adhesions to the sac; Eccles mentions a case where the neck of the sac was completely shut off from the abdomen by adhesions formed round the base of the appendix, followed by the development of hydrocele of the sac. In other cases cystic distension of the appendix renders it irreducible by increase in bulk.

(2) A herniated appendix being more exposed to injury is more likely to be the site of inflammation than one in its normal position,

and a large number of cases of this occurrence have been reported. Eccles suggests that strangulation of the appendix is secondary to this inflammation occurring in a restricted space, but this opinion is not shared by many.

(3) Strangulation of a herniated appendix is not infrequent, and recently Clogg has collected and analysed fifty-three cases of this condition. Three of these were in males and in inguinal herniæ. Fifty were in females and in each case the appendix was strangulated in a right femoral sac. In four cases omentum was also strangulated but in the others the appendix was the sole content of the sac.

Shaible records a case of spontaneous amputation of the appendix found during an operation for the relief of strangulated ileum in a right femoral hernia. Here the amputation was evidently of long standing and its presence merely an incident of interest.

The following is an account of a case on which I operated for Mr. Thorburn at the Manchester Royal Infirmary.

So far as I can ascertain it is the only case recorded where strangulation of the appendix has been found coexistent with strangulation of small bowel.

The patient, a female 77 years of age, was sent to the Infirmary by her medical man on January 11th, 1907, as a case of intestinal obstruction.

On examination she was found to be very ill; pulse 120, temperature normal; her pulse, in addition to being rapid, was also very feeble, and her tongue dry and furred. Her abdomen was moderately distended in the middle line, and in the right femoral region an irreducible hernia was found. She gave a history of a reducible hernia for some years; for the last year she had worn a truss, but two days before admission, while in bed without the truss in position, the hernia came down and at once became irreducible. She commenced to vomit, and her friends said that on the day of admission it became fæculent in character. After she reached the Infirmary there was no further vomiting. There was absolute constipation with no passage of flatus during these two days.

Immediate operation was performed under chloroform. On opening the sac a small quantity of turbid, rather fæcal-smelling, reddish fluid escaped. After sponging out the sac a small loop of very congested bowel was seen with what appeared to be a piece of strangulated omentum curled round its outer side. After incising the structures forming the neck of the sac, the loop of bowel was drawn down and found to be about two inches in length, tightly constricted at the neck

of the sac by a groove which had ulcerated almost through the coats of the bowel, where it was evidently not viable.

As she was not in a condition to stand resection of the loop and as only the grooves caused by boundaries of the ring were gangrenous, these rings were inverted into the lumen by Lembert's sutures and the loop returned to the abdomen. It was then found that what appeared to be a portion of omentum was the vermiform appendix, deeply congested, indeed almost black, with a rather thick and congested mesentery. By exerting gentle traction the cæcum was brought into the sac and the base of the appendix was found encircled by a deep constriction about half an inch from its junction with the cæcum. The meso-appendix was ligatured, and the appendix clamped with forceps close to the cæcum, ligatured and amputated, the stump being inverted into the cæcum by a couple of Lembert's sutures. The sac was then flushed out with saline solution, sponged dry and the cæcum returned into the abdomen. The thickened sac was cut away, the canal packed with gauze up to the neck of the sac and the skin wound partially closed by sutures. The bowels were moved next day after a simple enema, and caused no subsequent trouble. The gauze was removed on the second day after the operation, and the wound was healed at the end of two weeks.

Convalescence was uninterrupted, and she left the hospital at the end of three weeks, wearing a light truss.

It is admittedly difficult to distinguish between strangulation of the appendix and inflammation of a herniated appendix as their appearances become similar after a short time but this case I consider one of primary strangulation for the following reasons:

(1) It was accompanied by a strangulated enterocele and if regarded as an inflammatory appendix, it would be necessary to assume the existence of two distinct pathological conditions.

(2) A distinct groove was found on the appendix at a site corresponding with the constriction of the bowel.

(3) The appendix contained no concretion, its mucous membrane was congested but presented no sign of ulceration nor of stenosis.

(4) There were no adhesions to the sac or small bowel as would be expected in appendicitis of at least two days standing.

(5) The fluid in the sac contained no flakes of lymph and the temperature was normal.

In conclusion I wish to express my indebtedness to Mr. Thorburn for permission to publish this case.

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CHRONICLE.

Medicine.

EMERSON. **Acute Leukæmia.** *Bulletin of the Johns Hopkins Hospital*, March, 1907.

EMERSON records three cases of acute leukæmia with explanatory remarks:—

CASE I. "Acute lymphatic leukæmia without enlargement of lymph glands or spleen, with localised involvement of the bone marrow and with very many white cells soluble in dilute acetic acid." The above case showed, on blood examination, a greater number of white cells than red—880,000 of the former to 752,000 of the latter. The predominating white cell was a palely-staining mononuclear, with a vacuolated nucleus and abundant basophilic protoplasm. Its size varied between that of a lymphocyte to that of a giant cell. The bone marrow of the vertebræ showed pyoid hyperplasia, the medulla of the other bones being normal. This illustrates the importance of examining more than one bone in autopsies in blood diseases as insisted on by Grawitz. Acute leukæmia is probably myelogenic. The typical cell, as described above, is considered to be an ancestral form of the myelocyte, and every stage between such a cell and a myelocyte has been observed. This has led to acute leukæmia being called "myeloblastic leukæmia" as contrasted with the "myelocytic" or "spleno-medullary" form. Pappenheim regards this myeloblast as being closely related to, if not identical with, the ancestral cell of the red blood corpuscle, and this view receives confirmation from the fact that in the acute leukæmias there is a much greater disturbance of the red blood count than in the chronic forms, in which the disease strikes at a younger generation of cells and spares the source of origin of the reds. The fragility of the myeloblastic cell has been frequently commented on; it is associated with a great tendency for the cell to disappear in any diluent which contains acetic acid, and so falsify the leucocytic count. Fragility and difficulty in staining are special attributes of embryonic cells.

CASE II. "Acute (myelogenic?) leukæmia, resembling a septicæmia, with leucocytes almost all achromatophilic." The clinical history of this case closely resembled typhoid fever. During the course of the disease the question of its being liver abscess was discussed, and this resemblance is found in many cases of acute leukæmia. The white cells could not be made to stain with any of the known blood-staining

methods, and this was probably due to some chemical disturbances of the plasma. There was a noticeable absence of severe anæmia, the red cells number 4,600,000 per cm.m.

Case III. "Acute leukæmia (?) with leukopenia, aplastic leukæmia." In this case all the general features of acute leukæmia were present—anæmia, cachexia, hæmorrhages, general lymphadenoid hyperplasia, enlarged liver and spleen. The leucocyte count, however, was only 3,800 per cm.m. Large mononuclears predominated. This is a typical count of aplastic leukæmia as described by Wolff, and the condition is also known as acute pseudoleukæmia, acute Hodgkin's, aleukæmic pseudoleukæmia, and chloroma.

The following types of acute leukæmia are described in this paper:

1. Classical form—sudden general enlargement of the lymphadenoid system with characteristic blood count.
2. Acute infective type—typhoid and streptococcal septicæmia.
3. Hæmorrhagic.
4. Asthenic.
5. Buccopharyngeal—pseudoscorbutic pharyngeal.

Donald Core.

Thiis (K.). **303 cases of Croupous Pneumonia.** *Norsk Mag. for Laegevidenskaben* 1907, p. 285.

These cases were treated in a Norwegian hospital, 1895—1904. They were mostly in female wards, and concerned 232 women and 71 men. Sixty-three women and 13 of the men died, the mortality being about 8 per cent. at ages between 1 and 30, 33 per cent. at 40—50, 43 per cent. at 50—60, 57 per cent. at 60—70, 65 per cent. at over 70. As regards sex, the author notes that Holmsen found 60 per cent. males and 40 per cent. females in about 73,000 cases of pneumonia observed in Norway 1869—1878. Of Thiis' cases, 15·7 per cent. occurred in May, 12·7 per cent. in June; the lowest percentages were 4 per cent. in July, 6 per cent. in August. Out of 299 cases, in 50 per cent. the right lung was affected, in 28 per cent. the left, and both in 22 per cent. One lobe was affected in 55 per cent., mortality 17 per cent.; two lobes in 32 per cent., mortality 24 per cent.; three lobes in 11 per cent., mortality 60 per cent.; four lobes in 5 cases, 2 of which recovered. The apices were affected in 31 per cent. of the adults, 48 per cent. of the children. Prodromal symptoms were observed in 16 patients; the onset was acute in 284 patients, a rigor occurring in 58 per cent. and shiverings in 21 per cent.; vomiting was noted in 19 per cent.; pain and cough almost always following with 24 hours. In one case the pain was referred solely to the sound side; in three-fifths of the patients with bilateral pneumonia the pain was referred to one side only. The temperature rose to about 102° in 60 per cent. of the patients, to 104° in 20 per cent., and was often not above 100° in aged or enfeebled patients; a high temperature was twice as common in apical as in other pneumonias. The fever was continuous in 66 per cent., irregular in

21 per cent., intermittent in 3 per cent., and absent in 2 cases; marked remissions with high temperature were of good prognosis. A pseudo-crisis occurred in 29 patients, of whom only 2 died. A crisis within 48 hours was seen in 79 per cent.; lysis usually took 4—5 days. Half the crises occurred on the 6th, 7th or 8th day; only 7 per cent. were seen after the 11th day; in 2 or 3 cases the crisis was on the first day, in 8 on the second. Among adults, the pulse was under 100 in 25 per cent. of the patients, with 21 per cent. mortality; 100—120 in 43 per cent., with 23 per cent. mortality; 120—140 in 28 per cent., with 50 per cent. mortality; and over 140 in 4 per cent., with 67 per cent. mortality. A man of 64 with cardiac myopathy had a pulse up to 200, and recovered. Dicrotism was recorded three times. Bradycardia after the crisis was exhibited by 23 patients. The respirations in adults were 30—40 in two-thirds of the cases, 40—50 in one-sixth, over 50 in one-eighth. Herpes was found in 15 per cent., and was of good prognosis, as only 11 per cent. of these patients died. Expectoration was marked in 79 per cent., and characteristically pneumonic in 71 per cent.; it was rusty in half the cases. Sixty-three patients had no expectoration, a condition seen oftenest in children and in the very old. The urinary chlorides were diminished in 63 per cent., absent in 9 per cent. Albuminuria was present in 69 per cent., absent in 31 per cent.; it was usually slight, and of no bad prognostic importance unless severe. Bile pigment occurred in the urine of eight patients, of whom four died. The diazo reaction was found in 10 out of 49 cases. The average leucocytosis in 19 cases recovering was 23,400; in 9 fatal cases, 16,000; a woman of 71 who recovered gave a count of 50,000, and a woman of 77 who died had 31,000 leucocytes per cbc. mm. Among the complications, there were 8 cases of empyema, 6 of endocarditis, 4 each of pericarditis, gangrene of the lung and abscess of the lung, 2 of meningitis, and 1 of insanity. Thiis discusses numerous other minor points about pneumonia in this paper.

A. J. Jex-Blake.

Blegvad (N. R.). **The effect of the Telephone on the Ear.** *Nord. Med. Arkiv.*, 1906, No. 39, p. 1.

The author gives an elaborate summary of what has been written about the harmful effects that may accrue to the ear from excessive use of the telephone. He has also investigated the ears and hearing of 450 female Danish telephone-operators, 325 of whom were employed in the central telephone office at Copenhagen. In about one-fourth of the cases he found retraction of the drum of the ear (generally the left ear) used for the telephone, while the other drum showed no such retraction. To be a professional telephonist does not diminish the auditory acuity of a person with healthy ears, nor does it increase it. In 20 per cent. of 350 cases there was a slight loss of power to hear the lowest audible tones, due no doubt to want of practice; no improvement in the power to hear high notes was found. In the healthy person practically no

other troubles are caused by use of the telephone; in a few cases headache, earache, tinnitus, and other disagreeable sensations were observed, but this was only in nervous or debilitated telephonists. Hence only healthy persons with healthy auditory apparatus should be employed in telephone offices. In other countries numerous cases have been recorded in which permanent injury to the ears, or traumatic neuroses, have been caused by the entry of strong electric currents into the telephone circuits, or by lightning striking the telephone wires. In Copenhagen such lightning strokes are common, but it is very rarely that permanent injury to an ear follows them; no serious case has yet occurred. A special form of the telephone, weighing five ounces and fixed to one ear by a band going round the head, which is often disliked by telephone operators; this may give rise to local itching, acne, eczema, or external otitis, in a few cases, and such an instrument cannot be removed from the ear so quickly as the common hand telephone should sudden loud noises or any special occurrence demand its removal. The author clearly thinks that the dangers of the telephone to its operators are over-rated.

A. J. Jex-Blake.

Gordon (A.). **Cases allied to Amaurotic Family Idiocy.** *New York Med. Journ.*, February 16.

The two cases reported in this paper—a brother and a sister, the offspring of Russian Hebrew parents—are very dissimilar to those of the disease described by Waren-Tay and Sachs, and now known an amaurotic family idiocy. Nor does it seem justifiable to regard these cases as belonging to any variety of this disease, as, despite the assertion of the author to the contrary, all the cases of amaurotic family idiocy that have been described conform closely to the original type.

The boy was 9 years of age. From the age of 12 months it was noticed that he could not see well; he has remained very childish in his manner, and though he had attended school for eight years he was still in the lowest grade. He was very obese, and had marked physical stigmata of degeneracy, including six fingers on each hand and six toes on each foot, and very poorly-developed genitalia. There was no paresis or other affection of his limbs, and the reflexes were normal. His sight could not be improved beyond $^{20}/_{200}$, and the ophthalmoscope revealed partial optic nerve atrophy and retinal degeneration, but there was no cherry-red spot in the macular region, as is characteristic of amaurotic family idiocy.

His sister was 13 years of age when observed. Her history and present condition were practically identical with those of her brother, except that, in addition, her articulation of words was very indistinct.

In one of these cases the thyroid gland was enlarged, in the other it could not be felt; on this ground, the author assumes that the disease may be due to some anomaly in the structure or function of one of the ductless glands. Unhappily, no mention is made of the presence or

possibility of hereditary syphilis in these cases. Spielmayer has described more or less similar cases developing on a congenital syphilitic basis as a special form of amaurotic family idiocy, but they, too, were absolutely distinct from the Waren-Tay-Sachs disease, the cases of which rarely, if ever, survive over three years of age, and in none of which has there been any suspicion of a syphilitic factor in the ætiology.

GORDON HOLMES.

DANA (C. L.). **Brachial Neuralgia and Arm Pains.** *Medical Record* February 23, 1907.

BRACHIAL neuralgia, which, in the author's opinion, is much more common than it is generally supposed to be, is characterised by severe pains in the upper extremity, chiefly in the shoulder and upper arm, and is due to irritation or inflammation of the trunks of the brachial plexus. It usually runs a course of several months' duration, and in contrast to a definite neuritis of these trunks, is not accompanied by paralysis, anæsthesia, atrophy or vaso-motor symptoms. Cases of traumatic origin or due to gross organic disease are excluded from the author's list.

The condition is more frequently met with in women than in men, generally in middle life; there is often a neuropathic taint, and in some cases a rheumatic diathesis. It may follow unwonted exertion of the limb or an emotional strain. The morbid anatomy, on the analogy with sciatica, probably consists of perinueritic inflammation and possibly some exudation into the nerve; the symptoms often suggest that there is in addition a subacute inflammation of the muscular and connective-tissues in which the nerves lie.

The onset of the pain is generally sudden, but it may be preceded by aching in the limb. It is very acute, especially in the front and inner side of the arm, and from there it passes down into the fingers, usually into those of the radial side of the hand. Though it is constant, there are usually frequent exacerbations of the pain, and any movement of the limb makes it worse. In the earlier stages of an attack there are no objective changes in the arm, but later there may be slight vaso-motor affection, as swelling and œdema of the hand, and a reduction of the tendon reflexes, but no sensory change is found. The nerves are generally tender to pressure along their course, and a point of tenderness is almost invariably found between the scapulæ, at about the level of the second and third dorsal spines.

The recognition of the condition is not difficult; the cases are at first almost invariably treated as "rheumatism," but this diagnosis can be dismissed by the absence of myositis or arthritis. From neuritis neuralgia is distinguished by the absence of sensory disturbances, muscular palsies, atrophy and electrical changes.

The first essential in treatment is rest. The salicylates, and especially aspirin, do good and relieve pain, but massage and the hot baths must be avoided in the acute stages.

GORDON HOLMES.

Deaver (J. B.). **The surgical application of Blood examinations.** *New York Med. Journ.*, February 2, 1907.

The author thinks that a hæmoglobin percentage below 25 and the presence of small distorted red cells indicates a condition unsuited to withstand an operation of any magnitude. An increase of the leucocytic count is, he thinks, of great value in the differential diagnosis of acute appendicitis from pyosalpinx and biliary tract disease, though anomalous cases occur where, in spite of a low count, pus is found on operation. A differential count showing relative increase of polymorphonuclear cells is of great value as indicating suppuration even in the absence of a total leucocytic increase, but the time required for a differential count robs it of its practical value.

E. N. Cunliffe.

Summons (W. E.). **Miners' Disease.** *Intercolonial Med. Journ. of Australasia*, January 1907.

The author gives an abridged account of an enquiry made by him into the respiratory diseases occurring amongst miners at Bendigo, Victoria. As a result of his observations he found that the inhalation of silica and aluminium dust was responsible for the production of many cases of pneumoconiosis. Such cases were characterised by fibrosis of the lung, bronchitis, emphysema and pleurisy. The disease was a purely local one with no constitutional disturbance, and progressive loss of weight and weakness were indications of tuberculous infection. All fatal cases showed tuberculous changes superimposed on the fibroid condition. The prophylaxis consists of absolute prevention of dust by the use of water jets and sprays and in the improvement of the mine ventilation. Prevention of tuberculous infection should be strictly attended to by the employment of the usual measures.

E. N. Cunliffe.

Emerson (C. P.). **The Blood in Pernicious Anæmia.** *Johns Hopkins Hosp. Bull.*, February, 1907.

A study of eighty-nine cases of the disease is recorded. Blood counts were done at least once a week. The more important conclusions arrived at are:—

1. The leucocytes are usually diminished in number, but the small mononuclears are always relatively, and sometimes absolutely, increased.

2. The red cell count shows a constant ebb and flow in every case, contrasting markedly with the anæmia of myxœdema or cancer. For a count to remain constant for any length of time is evidence against the diagnosis of pernicious anæmia.

3. The non-parellelism between the blood picture and the subjective symptoms is frequently marked.

4. Myelocytes occur more constantly and in greater numbers in pernicious anæmia than in any other disease except leukæmia.

5. Blood crises, that is, periods during which large numbers of nucleated reds are present in the peripheral blood, are not necessarily evidence of improvement.

E. N. Cunliffe.

Wroth (P.). **A note on the volume and colour index of the Red Corpuscles.** *Johns Hopkins Hosp. Bull.*, February, 1907.

The author repeated the observations made by Caps, and confirmed his conclusions, which were as follows:—

1. In primary anæmia the cell volume is increased.
2. In secondary anæmia the cell volume is diminished.
3. Red cells do not become supersaturated with hæmoglobin. The increase of hæmoglobin in the red cells in pernicious anæmia is due to increase in the volume of the cell, not to supersaturation.

E. N. Cunliffe.

Agasse-Lafont (M. E.). **The Pernicious Anæmias.** *Gazette des Hôpitaux*, March 2 and 9, 1907.

The author uses the term "pernicious anæmia" in its widest sense. Under this heading he includes all cases where there is a marked impoverishment of red blood cells produced in a gradual, progressive and continuous manner, the possibility of remissions or of cure not being excluded. He divides the cases into two classes:—

1. *Symptomatic pernicious anæmia.* The more important conditions include intestinal parasites, chronic intoxications, such as lead and carbonic oxide gas, chronic infections, such as malaria, tubercle and syphilis, repeated small hæmorrhages, chronic nephritis, cancer of the stomach, and pregnancy.

2. *Idiopathic pernicious anæmia.*

The author does not believe that it is possible to differentiate between the two classes, either by the blood picture or the symptomatology. The symptomatic group is distinguished merely by the presence of an exciting cause.

The author gives a full description of the symptoms, pathology, prognosis and treatment. He is of opinion that the essential cause of the disease is a failure of hæmatopoiesis which may be due to a variety of causes, and careful search into the past medical history and into the hereditary predisposition is necessary. He does not accept the hæmolytic theory. As regards prognosis, he is inclined to Hayem's view that the worst prognostic sign is a decrease in the number of blood platelets occurring coincidently with want of retractibility of the blood-clot. The most valuable methods of treatment are the exhibition of arsenic and of bone marrow, serum therapy and radiotherapy. An extensive bibliography is appended.

E. N. Cunliffe.

HILDEBRANDT (W.). **On the etiology of Erythema Nodosum.** *Muench. med. Woch.*, February, 1907, pp. 310-13.

HILDEBRANDT points out that even before Koch's discovery of the tubercle bacillus, it was observed by Uffelman that there was some relation between a certain severe form of erythema nodosum and tuberculosis. Hildebrandt now gives an account of a case which was under observation for nine months, which showed at the beginning a severe form of erythema nodosum, and which was proved to be a case of tuberculosis, both clinically as well as experimentally (intra-peritoneal injection of patients' blood into guinea-pigs). He cites cases reported by other writers, as well as four others of his own, in which erythema nodosum occurred along with tuberculosis. His conclusion is that it is possible, though it has not been proved, that a form of erythema nodosum, indistinguishable from ordinary erythema nodosum, may be produced by the agency of tubercle bacillus.

J. BERNSTEIN.

HUBER (A.). **The hereditary factor in Gastric Ulcer.** *Muench. med. Woch.*, January, 1907, pp. 204-7.

HUBER considers that hitherto the question of heredity in gastric ulcer has been neglected. He details the family history of 19 cases, and considers that heredity was an important factor in 15 per cent. of his own cases and 33 per cent. of Bernhard's. Sometimes he found the disease in three generations.

J. BERNSTEIN.

RAVIART (G.), PRIVAT DE FORTUNIÉ (J.) and LORTHIOIS (M.). **Ocular symptoms of general Paralysis, their diagnostic value in the different periods of the affection.** *Revue de Méd.*, October, November and December, 1906.

THIS paper, which extends over 120 pages, is based upon the examination of 268 patients. The authors conclude that general paralysis never reaches its final stage without the appearance of ocular signs at some time or another. Certain ocular abnormalities may be met with which have no connection with the disease itself, as, for example, exophthalmos, ptosis, nystagmus, strabismus, and even inequality of the pupils. Others are of secondary importance, appearing only occasionally in the course of the malady, such as lesions of the cornea, extrinsic motor affections, hippus, etc. But the symptoms characteristic of general paralysis are disorders of the internal ocular muscles, which give rise to irregularities, contraction, dilatation or inequaltiy of the pupils, and to alterations in the pupillary reflexes, and also lesions of the fundus.

The authors' observations show that paresis of the external muscles and nystagmus are rare in general paralysis; they occur at any stage of the disease, and have but little diagnostic value. They believe that "decolouration of the iris" is a common symptom, especially in advanced stages; but it is met with also in other affections. Irregularity in the outline of the pupil is of very frequent occurrence, and appears early; but it is seen in other conditions, though with less frequency than in general paralysis. Contraction of the pupils is more common than dilatation, but neither has much diagnostic significance. The former is met with frequently in tabes and organic and senile dementia, the latter in dementia præcox. Inequality of the pupils is of very frequent occurrence, and is met with in all stages; but it occurs so often in other affections that too much significance must not be given to it. It is of chief diagnostic importance when seen before the appearance of other symptoms. Abolition of the light reflex is especially marked from the beginning of the second stage, and has great diagnostic significance whenever occurring; affections of accommodation are rare. The Argyll-Robertson pupil was noted in 50 per cent. of the cases observed, and was of equal frequency in all periods. Alteration of the palpebral pupillary reaction—contraction of the pupils when an effort is made to close the lids against resistance—is common at all periods. Study of the effect of atropine on the pupillary reactions and also of refraction has given no results of importance. Lesions of the fundus are so common in other diseases that they have not much weight in diagnosis, though atrophy is more common in general paralysis than in any other similar affection. It may have an especial importance in suggesting the nature of the condition, when observed in the pre-paralytic stage.

In differential diagnosis, the presence of ocular signs would be of great service in distinguishing general paralysis from neurasthenia or hysteria; but in epilepsy it is not uncommon to observe inequality of the pupils and irregularity or diminution of the reflexes. In making the diagnosis from melancholia, mania and "folie à double forme," the presence of ocular signs may be of considerable importance, especially in the case of association of the latter disease with alcoholism, when the resemblance to general paralysis may be very close. Alcoholism alone may simulate general paralysis in any of its stages, and inequality of the pupils is not infrequently present, but alterations in the light reflex are rare and fleeting. The ocular signs are not of great assistance in the recognition of general paralysis from tabes, disseminated sclerosis and senile and organic dementia. In dementia præcox, the ocular signs that may be met with are slightly marked and fleeting; the only one which is relatively permanent is mydriasis, and that is rare in general paralysis. The ocular signs habitually persist during the remissions of general paralysis.

J. W. Russell.

Riesman (D.). **Acute Pulmonary Œdema, with special reference to a recurrent form.** *The Amer. Journ. of the Med. Sci.*, 1907.

There is an acute pulmonary œdema that comes on without any apparent exciting cause and often kills in a short time. Recovery from an attack is frequent, but there is a striking tendency to recurrence, subsequent attacks being similar to the first. The attacks set in suddenly, usually at night, and place the patient's life in jeopardy. The clinical causes are various, arterio-sclerosis and cardiac and renal disease being the most important. The pathogenesis is obscure, but vasomotor disturbances and a disproportionate activity of the two ventricles (the right predominating) are the chief factors. The chief symptoms of the condition are agonising dyspnœa, cyanosis, cough, expectoration of frothy albuminous fluid, and profound prostration. Over the lungs, often more over the upper than the lower portions, the characteristic moist râles of œdema are heard. The most valuable remedies are bleeding, dry cupping and cardiac stimulants. The writer considers that the condition is of sufficient importance to warrant its having a special chapter in the text-books of medicine. Notes of six cases are given.

E. M. Brockbank.

Lavenson (R. S.). **The nature of Aplastic Anæmia and its relation to other anæmias.** *The Amer. Journ. of the Med. Sci.*, 1907, p. 162.

Aplastic anæmia is a variety of progressive pernicious anæmia, the essential features of it being a rapidly fatal course, a marked reduction in the number of red blood corpuscles, a greater proportionate reduction in the amount of hæmoglobin, resulting in a low colour index, a leukopenia with a relative lymphocytosis, an absence of megaloblasts and usually normoblasts. Post-mortem, the characteristic finding is a pale bone-marrow in which the signs of erythrocytic and granulated leukocytic formation are wanting. The differences between aplastic anæmia and the usual form of progressive pernicious anæmia result entirely from the absence of regenerative processes in the former. The blood picture in aplastic anæmia is the result of two factors, one the hæmocytolysis and the other the failure of regeneration on the part of the bone-marrow. The failure of regeneration of the blood elements of the bone-marrow represents the result of one of the three following conditions: (*a*) A simple deficiency of the regenerative powers; (*b*) an inhibitive action on the bone-marrow by the factors producing the destruction of the blood elements; and (*c*) a true aplasia of the bone-marrow. If there be a true aplasia it is probably of recent origin, for it it were of long duration there would in all probability have been manifestations of a deficiency in blood formation before the advent of the hæmolytic agent. The relations of lymphocytes to leukocytes and red blood corpuscles in aplastic anæmia lend evidence to the view that lymphocytes are not a specific product of the bone-marrow.

E. M. Brockbank.

BATTY-SHAW (H.). **The utility of the Sphygmomanometer.** *The Clin. Journ.*, March 27, 1907.

THE writer urges the more frequent use of the sphygmomanometer, stating that:—

1. Mere digital examination of the pulse very frequently fails to show that the blood pressure is raised.

2. The sphygmometer, *e.g.*, Dudgeon's, is not to be relied upon as a means of establishing the existence of high arterial tension.

3. The sphygmomanometer of Riva-Rocci, as modified by Recklinghausen, Martin and Mummery, gives an accurate representation of arterial blood pressure unless either œdema of the limb or extensive calcification of the vessels is present, though the latter does not seriously affect the reading.

4. The systolic blood pressure is one which may easily be observed.

5. In young adult males the systolic pressure is 100 to 130 mm. Hg., in women about 10 mm. less. Janeway considers that after 50 years the pressure may be 130—145 mm. Hg. normally.

6. There is a general concensus of opinion that the majority of cardiac cases show a pressure within normal limits. In aortic regurgitation variability of the systolic pressure is often a noticeable feature. Intra-cranial hæmorrhage, whilst producing compression, will cause a rise of blood pressure.

7. That maintained high tension is associated with cardiac hypertrophy, accentuated aortic second sound, hypertrophy of the tunica media of the arteries, producing the leathery hardness described by Clifford Allbutt, also lengthening of the arteries; increased amount of urine secreted, of low specific gravity.

The use of the sphygmomanometer will often prevent one from administering cardiac stimulants, such as digitalis, strychnine or strophanthus to patients suffering from cardiac disease with high blood pressure, as these patients obtain most relief from measures calculated to lower blood pressure and not to raise it.

Cases of maintained high tension without other physical signs, and without albuminuria are probably all cases of involvement of the kidneys, and the sphygmomanometer may help to reverse the common experience that the number of contracted and contracting kidneys found post-mortem is largely in excess of the physician's expectations as based upon the clinical examination of these cases.

J. D. MARSHALL.

HARE (H. A.). **The clinical significance of variations in Blood Pressure.** *The Therap. Gaz.*, 1907.

THE writer, after pointing out the great importance of studying physiological changes of blood pressure dependent upon the heart,

arteries and arterioles, volume of blood, elasticity of the arteries and the vasomotor centres, proceeds to discuss pathological hypertension and hypotension.

Taking up cases of high tension first, we find that this may be normal or pathological.

Normal cases of hypertension possess little interest for the clinician unless associated with cardiac weakness, or are so prolonged or great as to cause cardiac distress or injury, *e.g.*, that occurring in the sedentary man who suddenly decides that he needs exercise, and takes it in excessive degree. Another type of normal high tension, in one sense of the word, is met with in the stage of onset of acute febrile diseases, where there is an effort to supply more blood to all areas, or certain areas, for protective purposes. Another beneficial type is the high tension of intra-cranial injury or disease, as pointed out by Cushing, and venesection is therefore incorrect treatment in many cases of apoplexy if this view is correct. Hypertension during labour permits women to take chloroform with relative impunity.

Pathological hypertension is of the persistent type, often due to fibroid changes and a powerful heart. Lauder Brunton has advanced the view that not only does high pressure do harm by interfering with the nutrition of the tissues, but it also compresses the vaso-vasorum between the inner coat and the fibrous coat, which is fixed because it has reached the point of fixation by distension, thus interfering with the nutrition of the vessels themselves. In many men past middle life a state of increased tension exists which is not appreciated because the heart has gradually become accustomed to the higher pressure; the stress and strength are so nearly balanced that with a sudden increase in exertion, as in running for a car, dilatation due to overstrain at once developes. In regard to high tension, there is now an abuse of vaso-relaxants, very frequently an hypertrophied heart of high tension may have established for itself a new standard of pressure, say of 130 to 170 mm. Hg., and if this is reduced a state is produced which may be considered as abnormal, as is a pressure below the true normal.

Hypotension depends in the great majority of instances upon cardiac weakness, but in one disease at least a persistent low tension is due not to cardiac feebleness, but to vascular relaxation, viz., exophthalmic goitre; the tachycardia is probably due to relaxation of the arterioles. Hypotension is met with most frequently in acute diseases, and if marked is of great gravity. One type is met with at the critical period of acute infections, of which the most noteworthy is croupous pneumonia. This state depends upon hypotonus, and treatment calls not for cardiac stimulants, but for vascular stimulants, such as atropine and strychnine. A second type is met with in more prolonged infections, *e.g.*, in typhoid fever; here hypotension depends upon toxæmia, feebleness of the nervous system, and often a degenerative change in the muscularis of the vessel wall. Hypotension is not uncommonly due to influenza and other asthenic toxæmic diseases.

J. D. Marshall.

Surgery.

LILIENTHAL (H.). **End to end Arteriovenous Angeiorraphy.** *Annals of Surgery*, 1907. Vol. xlv., p. 1.

THE writer here records a case in which he anastomosed the upper part of the femoral artery into the femoral vein above the saphenous junction, the lower part of the artery being completely obliterated. Carrel's technique was practically followed throughout, *i.e.*, the femoral vessels were laid bare for about two inches, and femoral pulsation was controlled by a tape ligature clamped around the external iliac artery, (this method was suggested by the present reviewer many years ago, for temporarily occluding the carotid vessels in operations for cancer); the vein was permanently ligated at the same level as the temporary arterial ligature, and temporarily ligated below this; the artery was then severed about 1 cm. below the point of intended anastomosis, and the vein about the same distance above it; stumps about 2 cm. long were thus formed, and the lumina of these stumps were carefully emptied of residual blood and filled with sterilised vaseline; the approximated ends were then sutured, three equidistant "anchor" sutures being first inserted, by traction upon which the contiguous walls were made straight and parallel for the readier passing of the intermediate running sutures; the ends of each running suture were then tied to the anchor sutures, but before tying the last one the vaseline was removed. On removing the tape compressing the femoral artery the pulsating current was immediately established, and there was no leakage.

Although the patient died 31 hours after operation, apparently from shock, the writer believes that arterio-venous angeiorrhaphy, the technical feasibility of which he has here demonstrated, will probably be successful in certain cases, *e.g.*, in threatened gangrene due to embolism of arteries distal to a main trunk, also in thrombosed aneurysm of the popliteal artery. He further suggests that in destruction of a portion of a main artery by traumatism or involvement in a malignant growth, resection of the artery with interposition of a piece of vein might be practised.

P. R. COOPER.

CORNER (E.). **Rotary Dislocation of the Atlas.** *Annals of Surgery*, 1907. Vol. xlv., p. 9.

IN the writer's opinion this luxation is far more frequent than is commonly supposed. He has collected 18 cases from literature, and here reports two cases of his own. In 8 cases the lesion was confirmed

at autopsy, and was found to be complicated by other injuries; in 6 cases the odontoid process of the axis was broken, in 1 the atlas was broken, in 1 there was a lateral fracture of the axis as well; in 7 the lesion was unilateral, and in 1 bilateral. In only 2 did death occur soon after the accident,—1 in a few hours, and 1 in 20 hours; in 6 death resulted after periods ranging from 23 days to many years.

The absence of spinal symptoms in many of the cases no doubt accounts for the frequency with which the lesion is overlooked; but the fact that in some cases serious and even fatal consequences have resulted later shows that a guarded *prognosis* should be given.

The five points upon which to rely for a *diagnosis* are (1) the position of the head, *e.g.*, flexed and turned to one side; (2) and (3) the positions and fixity of the transverse processes of the atlas; (4) the examination of the pharynx, *i.e.*, revealing *two* prominences; (5) the skiagraph of the lateral view of the neck, *i.e.*, showing a forward displacement of one side of the atlas.

As regards *treatment*, in a number of cases spontaneous reduction occurs when the muscles are relaxed. In others gentle traction on the head and rotation will effect reduction, care being first taken that there is no fracture of the odontoid. The head can be put up in a plaster-of-paris collar, or in wood wool and bandages. If, however, the odontoid process is thought to be broken the patient should be kept in bed with the head between sand-bags and reduction deferred for three weeks. Operative treatment, unless to relieve symptoms of pressure on the cord, is not likely to be of much use.

P. R. Cooper.

Quick (E.). **Intraperitoneal Rupture of the Urinary Bladder.** *Annals of Surgery*, 1907. Vol. xlv., p. 94.

This is a report of a case in which operation was performed 254 hours after the accident. About 2,000 c.c. of bloody urine were found free in the peritoneal cavity, and an opening which admitted the thumb was present on the upper surface of the bladder. This opening was sutured, the abdominal cavity was flushed with normal salt solution and closed, the bladder being drained by catheter for five days. Uneventful recovery followed. It was remarked that although the urine had been in contact with the peritoneum for eleven days, there were practically no evidences of peritonitis, the serosa being smooth and shining.

P. R. Cooper.

Blake (J. E.). **Silverized Catgut.** *Annals of Surgery*, 1907. Vol. xlv., p. 110.

The writer has made a number of tests as to the efficacy of Crede's method of sterilising catgut without heat. He found that perfect sterilisation was sometimes achieved after two days' immersion in silver

solution (*i.e.*, 2 per cent. collargolum), and always after three days' immersion. Catgut thus prepared showed a very marked resistance to subsequent infection, and also a strong inhibitory influence upon the growth of bacteria introduced with it into bouillon solutions. Its uses for ligature and suture material in operations has been found exceedingly satisfactory. P. R. Cooper.

Lusk (W. C.). **Drainage of Prostatic Abscesses through the Ischio-rectal Fossa.** *Annals of Surgery*, 1907. Vol. xlv. p. 103.

The operation here suggested is for cases of prostatic abscess which have not ruptured into the urethra, but bulge towards the rectum. The incision commences at the front and inner aspect of the ischial tuberosity, and is carried backwards and inwards across the floor of the ischio-rectal fossa. It is carried to a depth of $\frac{1}{2}$ to $\frac{3}{4}$ in. in front, and the finger being introduced and passed along the smooth obturator fascia enters a distinct fascial compartment. The apex of this compartment is carefully punctured in a forward direction, and the finger again pushed through into a plane of cleavage along the anterior fibres of the levator ani, above the triangular ligament. By dilating this space with the finger the abscess can be felt in the bottom of the wound, and can be readily incised by a knife passed along the finger. The details of the anatomy of the operation are clearly figured and described. P. R. Cooper.

Belfield (W. T.). **Drainage of the Prevesical Space through the Perineum in Suprapubic Cystotomy.** *Annals of Surgery*, 1907. Vol. xlv., p. 101.

The procedure suggested by the writer is carried out as follows:—Prior to closing the suprapubic wound the membranous urethra is opened on a grooved staff; the gorget is then introduced, and the staff withdrawn; a small trocar and cannula is passed from above close to the anterior surface of the bladder and prostate into the groove of the gorget. A few silkworm strands are threaded through the cannula and along the gorget out through the perineal wound,—by these a small perforated rubber drain may be drawn through the track. A large soft catheter is also introduced into the bladder. In nine cases in which the writer has tried this method the wound has been entirely healed within two weeks; he claims that the dangers of infection from stagnation of urine in the pre-vesical space can thus be prevented.

P. R. Cooper.

Cupler (R. C.). **Note on Gonorrhœal Osteomyelitis.** *Annals of Surgery*, 1907. Vol. xlv., p. 121.

The case here recorded appears to be a unique example of gonorrhœal infection. The patient was in the fifth week of gonorrhœal urethritis. He had nocturnal boring pain at the upper end of the humerus;

temperature 99°—101°F.; puncture of the joint failed to give relief. The end of the bone was roughened and necrosed. Relief followed only after bone curettage. Examination of the fluid and smears from the bone cavity showed biscuit-shaped diplococci which did not take the iodine stain.

The writer concludes that gonorrhœal bone infection is about the same in its toxic effect as gonorrhœal infection elsewhere, *i.e.*, much less toxic than the common staphylococcic osteitis.

P. R. Cooper.

Staehlin (E.). **Resection of ten feet two inches of small Intestine, with recovery.** *Annals of Surgery*, 1907. Vol. xlv., p. 49.

This was a case of resection of gut for strangulated hernia where the entire length of gut which contained gangrenous areas was securely clamped and removed. The mesentery was ligatured by a series of chain ligatures close to its upper attachment and severed. The ends of the gut were united by end-to-end anastomosis, and the remnant of mesentery also approximated. Gauze drainage was used. A fæcal fistula formed, but was closed by the ninth day.

P. R. Cooper.

Bullitt (J. B.). **Obliteration of the Stomach as a result of gastric Ulcer: Duodenostomy.** *Annals of Surgery*, 1907. Vol. xlv., p. 30.

This is a record of a case in which, four years after the first symptoms pointing to gastric ulcer, the patient began to have great difficulty in taking food, giving up solids and semi-solids, and, finally, being reduced to a teaspoonful of liquid at a time. Vomiting of ingested matter and mucus was continuous. The stomach tube could not be made to enter the stomach.

Operation—laparotomy; the stomach was identified with difficulty, being reduced to a hard nodular mass, the size of a medium oyster shell and buried in adhesions. Duodenostomy was performed by Witzel's gastrostomy method. Food was at once introduced. Subsequently the patient masticated the food before passing it into the funnel. In ten months the patient gained 40 lbs., and his general condition was excellent.

P. R. Cooper.

Nilson (G.). **An impalement wound with a Bayonet.** *Hygiea*, 1907, p. 145.

An unintelligent Swedish artilleryman, aged 23, was placed on the rampart of a fort before some gun practice began. When the first gun was fired he was so much alarmed that he fell back over the steep edge of the rampart. His rifle with bayonet fixed seems to have preceded

him, and when he reached the level ground he was impaled. The bayonet entered the right scrotum, passed along in the abdominal wall, and its point issued close to the lower angle of the right scapula. With the weapon trailing between his legs, he betook himself to his nearest comrades; the fall was so violent as to bend the neck of the bayonet. The rifle butt stuck, on the way, in the tail of a gun-carriage near by, and this produced a partial extraction; the removal was completed by his companions, and the patient was sent into hospital. Here he was found to be suffering from shock; there was an irregular wound three-fifths of an inch long in the right scrotum, and a similar wound of exit just to the right of the radix penis. A little above this was a wound of re-entry, and two inches above the lower angle of the right scapula was a small linear wound one-tenth of an inch long. The abdominal wound was partly opened up, and cleaned; it reached the costal margin in the right mammillary line, and did not seem to communicate with either the abdominal or the thoracic cavity, nor was the aponeurosis of the external oblique lacerated. The patient had fever for a couple of days, and developed a little dulness behind the right axilla, with tympany in front of it, and a little bronchitis and friction; paracentesis produced a little blood only. A month later the patient was discharged cured. The bayonet was about 20 inches long, just the distance between the extreme wounds in the patient when he was upright, and blunt. It must have passed through a good deal of the tissue of the right lung, without wounding any large vessel or bronchus; the physical signs showed that it produced a small hæmo-pneumo-thorax which was fairly rapidly absorbed.

A. J. Jex-Blake.

Rovsing (T.). **Bladder Tuberculosis and the possibility of its cure.**
Arch. für klin. Chirurg. Bd. 82, h. 1, p. 1.

The author comes to the following conclusions:—Tuberculosis of the bladder is secondary generally to renal disease, much more rarely to genital tuberculosis and is very seldom primary. It is hopeless to attempt to deal with vesical disease unless the offending kidney is removed, and one should never rest content with a diagnosis of vesical tuberculosis without also ascertaining the condition of both kidneys. For this purpose neither the cystoscope nor any of the urine separators are of any value because the disease rapidly spreads across the bladder and involves the half corresponding to the sound kidney, and an erroneous idea of bilateral disease is obtained.

The only satisfactory method of examination is by using the ureteric catheter and collecting a sample of urine from each kidney, and even examination is only of value if both or one are found free from tubercle bacilli; for if both are infected the disease may be merely spreading from the bladder up the ureter of the sound kidney. If, owing to the extent of the vesical disease or to a ureteric stricture, catheterisation is impossible, then both kidneys and ureters should be explored from the loin.

After removal of the offending kidney the vesical condition often clears up spontaneously, but if it still continues the author recommends the local use of carbolic acid. About 50 c.cm. of 6 per cent. carbolic acid is injected into the bladder, after the viscus has been washed out, and allowed to remain for two or three minutes, when it is removed, as a turbid fluid; this is repeated several times until the fluid is nearly clear. Afterwards a morphia suppository is necessary to relieve the pain. This is done every two days at first, and then at increasing intervals according to the condition of the urine and the cystoscopic findings.

The author has obtained excellent results by this method.

LAWRENCE JONES.

MÜLLER. **Decortication of the Kidney.** *Arch. für klin. Chirurg.* Bd. 82, h. 1, p. 271.

MÜLLER has performed the following operation on dogs:—The kidney having been exposed, the capsule is split and completely stripped off, the peritoneum opened and the omentum sutured to the exposed kidney. The dogs survived this proceeding, and later, at the autopsy, there was firm union between the omentum and kidney. By exposing the femoral artery and injecting a metallic emulsion under high pressure while the femoral vein was aspirated, it was possible to obtain an X-ray picture showing the freedom of the vascular connections between kidney and omentum. This operation, based on Morrison's procedure against cirrhotic ascitis, he has carried out on three patients suffering from chronic renal disease; in every case there was improvement in the patient's general condition and marked diminution in the amount of albumin in the urine.

LAWRENCE JONES.

ENOCHIN. **Ligature of the Thyroid Arteries for Goitre.** *Arch. für klin. Chirurg.* Bd. 80, h. 4, p. 967.

THE author publishes six examples of this treatment. He considers it specially indicated in vascular goitres. The diminution in size of the goitre begins at once, and is progressive. Subjective symptoms, such as cough and shortness of breath, become less, and frequently there is a marked improvement in the general nutrition. The cosmetic effect is relatively slight. It is best to include the surrounding cellular tissue in the ligature applied to the inferior thyroid artery; drainage is not necessary.

LAWRENCE JONES.

WEINRICH. **The pathology and treatment of Innocent Vesical Tumours.** *Arch. für klin. Chirurg.* Bd. 80, h. 4, p. 887.

THE special value of the cystoscope as a means of diagnosis is insisted on. Innocent tumours may become malignant, but such a change has not been observed by the author. The method of operation for choice is the intravesical operation of Nitze by the operation cystoscope; of 101 examples treated in this fashion 70 are cured, 18 have recurred, one died, and the remainder have been lost sight of. He points out that these results compare very favourably with those obtained by the suprapubic operation. The supposed danger from hæmorrhage does not really occur, and by means of the cautery the base of the tumour can be destroyed just as thoroughly as by the other route.

LAWRENCE JONES.

LAROYENNE. **Retrograde strangulation of Intestine.** *Gaz. des Hôpitaux*, February, 1907, p. 279.

BY this term the author means a strangulation of a loop of gut, still in the abdominal cavity, by the neck of a hernial sac; for example, if two separate loops of gut are strangulated in the same hernia then the intermediate loop connecting them in the abdomen may also be strangled.

The patient about whom he writes, was a man of 67, the possessor for many years of an untreated hernia, which suddenly gave rise to the typical signs of strangulation; there was no abdominal distension. Operation was performed. On opening the sac some citron-coloured fluid was found, and two apparently healthy loops of gut, one being formed by the cæcum and end of the ileum, the other by ileum; but on dragging down the loop their continuation into the abdomen was found to be black and in places almost gangrenous. Accordingly the abdomen was opened, and contained some blood-stained fluid and a gangrenous loop of gut two metres long. The condition of the man rendered resection impossible, so that the abdomen was merely drained after the constriction had been relieved. The patient died during the night.

Similar cases have been reported by Lauenstein, Puporac, Max Hoffmann and Langer; the case of the last-named was almost the exact counterpart of the present; the cæcum was in the sac, and there was the same surprising healthy condition of the hernial as compared to the abdominal loop; this is very difficult to explain, especially as Max Hoffmann considers that, in these cases the hernial strangulation is primary.

The author thinks it may be accounted for by invoking the extra factor of twisting or volvulus formation, in the case of the abdominal loop, a factor easily explained by the length and free mobility of the affected gut. He points out that an accurate diagnosis is impossible before operation, but that the condition cannot be overlooked if the rule of pulling down the hernial loop after relieving the constriction is followed.

LAWRENCE JONES.

NATHAN (F. W.). **Gonorrhœal joint disease and its treatment.** *New York Med. Journ.*, March 16, 1907.

THERE are two specific forms of joint infection, according as the primary focus implicates the bone or the joint. Bone infection, as revealed by radiograms, is always primary; arthritis may be primary or secondary to osteo-arthritis, but a primary arthritis never affects the bone, hence the importance of a radiogram. Osteo-arthritis reveals itself within a week or ten days by rarefaction of bone, if then the bone is normal we are dealing with an arthritis and the bone will not be implicated and bone overgrowth or ankylosis will not result.

Treatment. In the acute stage of either type absolute rest in bed must be enforced whilst the joint is immobilised in plaster of paris. As swelling subsides the plaster is re-applied. In osteo-arthritis this bandage must not be retained too long, but removable splints must be substituted and passive motion practised it may be for months. In primary arthritis immobilisation is carried on much longer. Resultant deformities are treated according as they are the result of synovial or osseous lesions. Adhesions are broken down under an anæsthetic, the joint immobilised in the extended position, followed later by passive motion and gradual resumption of function. In bony changes single spurs may be removed, but operative procedures for bony ankylosis produce doubtful results. Osteotomy to place the limb in better position may with advantage be performed where indicated.

F. G. HACK.

FISKE (J. P.). **Concerning the more common disabilities of the Foot.** *New York Med. Journ.*, February 23, 1907.

THIS paper gives a brief description of a few acquired disabilities, entering more fully into the treatment. The general principles on which these cases are treated are summed up thus:—The deformity is first corrected and an attempt made to restore the full range of movement by making systematic manipulations. Suitable footwear is to be ordered and the patient instructed how to stand and walk. In addition exercises are prescribed with the view of developing weakened muscles. As regards standing and walking, turned out toes must never be allowed; the toes should be slightly turned in when standing and the feet kept parallel when walking.

F. G. HACK.

VOGEL (K.). **The technique of Thiersch Grafting.** *Zeit. für Chirurg.*, March 30, 1907.

THE chief source of trouble in the after-treatment of cases grafted by the Thiersch method lies in the constant secretion from the underlying raw surface. Of late several methods have been suggested to obviate the trouble arising from this discharge. It has been suggested that the grafted surface be left freely exposed to the air, but if this be done it will be found that the secretion dries and crusts at the edges of the grafts and allows the pent-up discharge to accumulate under the grafts and to destroy their contact with the raw surface. On the other hand, if frequent dressings are employed the grafts run serious risk of being disturbed, and if the dressings are too moist or bulky the grafts become macerated and their vitality imperilled.

Vogel suggests a new method of overcoming the difficulty. Having laid down the grafts on the raw surface so that they overlap the edges of the wound and of the adjacent grafts he snips out numerous small elliptical openings in the grafts. These openings allow of the ready escape of discharge and prevent the grafts from being floated off in the discharge. If the surface is left without dressing the openings rapidly crust over and are of no use. It is necessary therefore to cover them with a light and moist dressing. Four layers of sterile gauze moistened with saline are placed next the wound and lightly held in place with a few turns of bandage. A larger ordinary moist compress dressing is then applied. This outer dressing is changed daily. On the fourth day the innermost dressing is removed and the wound then treated with simple ointment. This method is to be especially recommended in cases where it is desired to use the Thiersch method of grafting on a large surface with very abundant secretion.

E. D. TELFORD.

HARTMANN (H.) **Ileo-Cæcal Tuberculosis.** *Rev. de Chirurg.*, February 1907.

THE peculiar manifestations of tuberculosis of the ileo-cæcal region have been recognised only within the last few years. In the past this variety of disease has either been confused with the more common types of tuberculous disease of the intestine or has been regarded as a variety of malignant new growth. The condition occurs in two well-defined types. In the ulcerating form the disease is more widespread, more destructive and involves the adjacent peritoneum to a marked degree. In the second or hypertrophic form the disease is marked by thickening, especially of the cæcum, which may attain massive proportions In this type stenosis is likely to occur.

In the ulcerating variety much peritoneal matting is produced, the cæcum being buried in dense adhesions, often enclosing loculi of broken down tuberculous material. From the extension of the destructive

process fistulæ may result in various positions on the lower abdominal wall or thigh. In the hypertrophic variety the thickening is due to round-celled infiltration, especially affecting the submucous and subserous layers. The characters of this variety render it very probable that certain anomalous strictures which are from time to time encountered in the large intestine are tuberculous in origin.

Ileo-cæcal tuberculosis is usually seen between the ages of 20 and 40. The infection is probably always derived from the ingesta, and its localisation in the cæcal region arises from the fact that the longer stay of fæcal matter in this region affords increased facilities for infection. The two varieties of the disease are as well defined on clinical as they are on pathological grounds. In the ulcerating form the signs are frequent, and blood-stained motions followed by attacks of pain in the right iliac fossa. Palpation reveals a thickening or indefinite matting over the cæcum. The resemblance to appendicitis is very close, but the condition described is much less severe and much more chronic than the ordinary type of appendicitis.

In the hypertrophic form the symptoms are chiefly those of a gradually increasing stenosis. Alternate constipation and diarrhœa, colicky pains, meteorism and the presence of a definite, often movable, tumour occur. The prognosis is bad, and, as far as is known up to the present, all the cases have progressed steadily to a fatal termination within two to three years if left without surgical treatment. Surgical intervention holds out the only hope, and the later statistics prove that the operation has been attended by a noteworthy and increasing measure of success. The form of operative treatment recommended is excision of the mass with anastomosis of the ileum to the ascending colon.

E. D. Telford.

Pathology.

HAALAND (M.). **Mouse-Cancer and Cancer Research.** *Norsk Mag. f. Laegevidenskaben*, 1907, p. 105.

THE author gives a full account of the researches made into the various forms of malignant tumours that can be inoculated into mice, and adds some new work of his own. In 1889 Hanau found that a cutaneous carcinoma found in a rat could be transmitted to other rats. Moreau (Paris) in 1894 demonstrated that a tumour occurring in a mouse could be transferred to other mice in succession. In 1903 the extensive work of Jensen (Copenhagen) appeared; at the same time, and independently, Borrel (Paris) had collected a large number of mouse-tumours of which several were transplantable. Most of these investigations deal with white mice. Many of the malignant tumours seen in mice are histologically and clinically very similar to those found in man; *adenocarcinoma mammæ* is very common in the mouse—about 300 cases have been examined already; cancroids arising from squamous epithelium, and producing cornified cells, infiltration, and lymphatic metastases, are not rare; Jensen's mouse-tumour is a *carcinoma solidum*, with a tendency to early necrosis in its alveoli; while intestinal cylinder-celled cancer, primary cancer of the lungs, chondrosarcoma of the spinal column, the chondromas and sarcomas described by Ehrlich, and malignant lymphomas, have all been found in mice, and many are transplantable from one mouse to another. These tumours tend to grow rapidly and autonomously, infiltrating any resistant tissue they may meet, and producing metastases most often in the lungs by embolism and less frequently in the neighbouring lymph-glands. They tend to break down and ulcerate when they invade the skin; in the loose subcutaneous tissue of the mouse they may attain a great size; they produce death by sepsis or by emaciation. When portions of these tumours are inoculated into other mice, most of the cancer cells become necrotic, while the remainder proliferate with more or less activity. The inoculated animal merely supplies the nourishment, and perhaps a little connective-tissue stroma (Bashford) to the tumour. The percentage of successful inoculations is variable; it is often low at first, but increases to 50—100 per cent. after a few passages. After five years of passage from one mouse to another, Jensen's carcinoma remains histologically unaltered. But Ehrlich and Apolant have three times seen a cancer develop into a mainly sarcomatous carcino-sarcoma, after breeding true for many (10, 14, and 68) transplantations, and grow into a pure sarcoma finally. This process, once it began, required 3, 4 and 13 transplantations in the three cases; Loeb has seen the same transformation happen in one generation. Several explanations have

been offered for this; Ehrlich believes that the injected cancer-cells so stimulate the connective-tissue of the mouse that it develops into sarcoma-tissue.

The author gives photographs and microphotographs illustrating the structure and distribution of the inoculated cancers in the mice. Whether the tumours be spontaneous or inoculated, the metastases occur oftenest in the lungs, crushing and destroying the pulmonary tissue as they grow. With sarcomas, metastatic deposits are also found sometimes in the liver, spleen and heart, less often in the lymph glands, mesentery, or peritoneum. The transplanted tumour becomes more and more virulent as it is passed on; a transplanted sarcoma may weigh 9 or 10 grams after three weeks of growth, and thus its cells are capable of more rapid growth than even those of the embryo mouse—the period of gestation being about three weeks, and an average of six young being born, each weighing $1\frac{1}{4}$ grams. Ehrlich, applying his side-chain theory, explains this by supposing that the avidity for food of the receptors in the malignant cells is increased by passage. But it cannot be increased enough to enable these cells to gain a footing in the tissues of the rat, for after a few days of growth they are rapidly absorbed. Ehrlich supposes that the rat contains only a small amount of some substance necessary for the growth of the tumour cells, and that when this amount is exhausted, the cells become a prey to the rat's tissues, though still capable of growth if transplanted back from the rat to a mouse. Thus the rat enjoys an "athreptic immunity" to mouse-sarcoma.

Haaland's own researches go to show that different stocks of mice are very differently súsceptible to Ehrlich's mouse-sarcoma. The sarcoma took in 97 per cent. of Berlin mice, in 50 per cent. of one variety of Christiania mice, and in 24 per cent. of Hamburg mice; while Copenhagen mice and a second variety of Christiania mice were immune to it. If cells from Ehrlich's sarcoma and Jensen's cancer were mixed and injected into Copenhagen mice, only carcinoma developed in them, while in the Berlin mice only unmixed sarcomas grew. Injection with this sarcoma tissue gives no immunity against the cancer, and *vice versâ*; no doubt the two tumours have different receptor groups. The blood-serum of the resistent Copenhagen or Hamburg mice injected into Berlin mice did not protect them at all against sarcoma-injections; hence there is no reason to suppose that the serum contained any antibody for the sarcoma. Haaland found that changes in the food and conditions of life of the mice may make great difference in their susceptibility to Ehrlich's sarcoma; this point is now being examined in detail. The condition of pregnancy, while it lasts, lessens the susceptibility to the tumour-injections, as does a state of cachexia. Different parts of the mouse's body are differently susceptible to the injections; given intraperitoneally, the sarcoma failed to take in 11 Hamburg mice, whereas given under the skin it grew in 24 per cent. of the cases.

As regards tumour-immunity, many mice have an active inherited immunity to the sarcoma or the cancer, which is not lessened by repeated inoculations with these tumours. Ehrlich succeeded in giving

a marked degree of immunity against a virulent sarcoma to a large percentage of mice, by inoculating them first with a slightly virulent sarcoma, which took in only 2 per cent. of the cases injected. And, more than this, the mice thus immunised against a virulent cancer showed also a much diminished susceptibility to sarcoma and Ehrlich's transplantable chondroma, all these tumours having been previously grown up on mice of a single race. Prolonged warming or mechanical injury of the cells of a highly virulent tumour seem to lessen its virulence, but also to lessen the immunising power of the cells when injected; injections of filtered tumour emulsion-extract confers no immunity. As regards passive immunity, Gaylord (1905) and others described an anti-cancerous serum (Jensen's carcinoma); but Haaland clearly does not believe in the efficacy of any such serum, and his efforts to prepare one have failed. Haaland emphasises the main fact brought out by these researches on malignant disease in mice, namely, that the liability to cancer or sarcoma depends upon a constitutional habit of body, a diathesis, rather than on any sudden growth of embryonic cells or on infection with some parasite.

A. J. Jex-Blake.

Janeway (T. C.). **The pathological physiology of chronic Arterial Hypertension and its treatment.** *Amer. Journ. Med Sci.*, 1907.

There are certain pathological conditions associated with hypertension. In an analysis of 130 cases showing a systolic pressure of over 200 mm. Hg. collected by the writer, 13½ per cent. presented the same cardio-vascular lesions as chronic Bright's disease, but no evidence of renal involvement.

Hypertension occasionally occurs in a case of arterio-sclerosis; in arterio-sclerosis enlargement of the heart is only found when there is involvement of the splanchnic vessels or of the thoracic aorta.

In nephritis the problem of hypertension is more complicated; the writer agrees with the theory recently advanced by Loeb. Loeb suggests that there is a relationship between the glomerular changes and the hypertension, both in acute and chronic cases. Interference with the flow of blood through the glomeruli demands an increase in the renal blood pressure; this is obtained by a reflex splanchnic vaso-constriction which increases the general blood pressure sufficiently to maintain a normal rate of flow through the diseased glomeruli.

Treatment. The height of the blood pressure gives no indications whatever for treatment except along preventive lines. Hypertension is no more to be attacked than is a heart murmur. Only those symptoms which point unmistakably to failure in the maintenance of the circulation or to sudden threatening of danger, give the signal to interfere.

John Hay.

MARINESCO (M. G.). **The essential nature of the process of Nerve Degeneration.** *La Presse Méd.*, February 16, 1907.

PROF. MARINESCO points out that the various phases of nerve degeneration, after section, are readily and completely disclosed by Cajal's methods. In the peripheral part of the nerve the early phenomena are proliferation of the inter-fibrillar and peri-fibrillar nuclei with progressive degeneration of the nerve substance passing towards the periphery, but not affecting all the fibres simultaneously nor to a similar extent. The axis cylinders become dark and the neuro-fibrils disappear, undergoing what Prof. Marinesco calls "axolysis," and, ultimately, the granular detritus produced by their destruction is absorbed. Simultaneously with the "axolysis" the myelin sheaths of the nerves are broken up into globules and granules. Prof. Marinesco believes that the changes both in the axis cylinder and the myelin sheath are due to ferments produced on the internal surface of Schwann's sheath. Apparently the central part of the nerve exerts some action over the peripheral portion for the fibres in a transplanted piece of nerve always degenerate towards the periphery whether the original inner or the original outer end of the transplanted portion is placed in contact with the end of the central part of the divided nerve of the host. As the neuro-fibrils and the myelin sheath degenerate the cells of Schwann proliferate, and as their descendants play an important part in nerve degeneration, Prof. Marinesco has called them "apotrophic" cells. In his opinion they direct the course and provide for the nutrition of the new nerve elements formed by and under the influence of the central part of the divided nerve. The clinical changes which occur in the degenerating myelin are those associated with saponification, and are similar to the changes produced in myelin by the action of the pancreatic juice. They are due, therefore, to a ferment, and this, in Prof. Marinesco's opinion, is produced by the descendants of Schwann's cells. The chemical changes associated with "axolysis" are still unknown, but they also are probably due to the action of an enzyme. The phenomena of degeneration as seen in transplanted nerves are of great interest; they correspond with the phenomena seen in the peripheral part of a divided nerve if the transplanted portion is embedded in some other part of the body of the animal to which it belongs—"auto-transplantation," or in the body of an animal of the same species "homo-transplantation." If the transplanted portion is placed in the body of an animal of another species, "hetero-transplantation," the cells of Schwann do not proliferate, and the transplanted nerve undergoes necrosis, no regeneration being possible. Prof. Marinesco believes that this is due to the action of a cyto-toxin produced by the cells of the host, which prevents the proliferation of Schwann's cells (the "apotrophic cells") and so eliminates all possibility of regeneration.

ARTHUR ROBINSON.

RIEHL. **Macroscopic Asthma Spirals.** *Muench. med. Woch.*, November, 1906, pp 2240, etc.

RIEHL describes in detail four cases of asthma in each of which instead of Charcot-Leyden crystals and microscopic spirals he found in the sputum very large spirals with a central filament and reaching to 20 cm. × 3 cm. broad. Moderate emphysema with râles and diminished respirations existed, but hardly any dyspnœa. He regards these cases as illustrating a type of asthma in which only a few of the large bronchi are involved, and he suggests reserving the name bronchial asthma for this type in contra-distinction to Curschmann's bronchiolitic asthma, which extensively affects the lungs. He appends a bibliography.

J. M. BERNSTEIN.

MARTIN (M.). **A research into the influence of Tropical Sun on pathogenic bacteria.** *Muench. med. Woch.*, December, 1906, pp. 2521 to 2523.

AFTER some general remarks concerning the freedom of African natives from pyogenic processes, Martin details his experiments at Togo with various pathogenic micro-organisms exposed to sunlight, and his investigations into the organisms of the soil and air. He draws the following conclusions:—

1. Most pathogenic organisms are scarce in the Tropics.

2. This is due to the bactericidal action of the sun.

3. The chief factor is apparently the heat of the sun, though the sunlight has also a considerable influence.

4. A number of non-pathogenic organisms remain unaffected by the sun.

5. Purification of the sand on the seashore results from the mechanical action of the waves.

J. M. BERNSTEIN.

FLESCH (M.). **The pathology of Appendicitis.** *Muench. med. Woch.*, January, 1907, pp. 207-11.

FLESCH considers the occurrence of appendicitis in families to be due more to environment than to heredity. He regards the appendix as a glandular organ, possessing marked physiological functions, situated at a point in the intestines where a marked change occurs in the character and movements of the contents. Inflammation is due to bacterial infection following local injury (mechanical or chemical). The prophylaxis of appendicitis should be concerned with the prevention of constipation.

J. M. BERNSTEIN.

KELLY (A. O. J.). **Infections of the Biliary tract, with special reference to latent (or masked) and typhoid infections.** *Amer. Journ. Med. Sci.*, 1906, pp. 446-462.

DEALING first with the five possible paths of infection of the biliary tract, viz., (*a*) Vater's ampulla and the common bile duct, (*b*) the portal circulation, (*c*) the systemic circulation, (*d*) the lymphatic circulation, (*e*) from the peritoneum directly through the wall of the gall-bladder or gall-ducts, Dr. Kelly concludes that the frequency with which ascending infection takes place—by the common bile duct—has been overestimated in the past; against this channel of infection is the action of the sphincter of the diverticulum and also the influence of the free flow of bile. In the case of typhoid fever the frequency with which the bacillus is isolated in pure culture from the gall-bladder in this affection is against an ascending infection. Infection via the portal circulation is the most common to occur of the remaining four possible routes; the direct infection from the peritoneum can probably not occur in the absence of adhesions, and then it is probably an infection via the lymphatic circulation. The regular presence of the bacillus in the gall-bladder in typhoid and its persistence there or within gall-stones for seven years is now well recognised, and a history of antecedent typhoid fever is often obtained from subjects of gall-bladder disease. That the discharge of typhoid bacilli from the gall-bladders of persons who have at some time or other had enteric fever may be the cause of epidemics occurring years later, even though the disseminators may be apparently healthy, has been recently insisted on by various authorities (*e.g.*, the interesting case recorded by Metchnikoff in his Harben lecture). The gall-bladder conditions in typhoid fever may be grouped in three classes—(1) a noteworthy enlargement without symptoms; (2) slight nausea or pain is complained of and examination reveals an enlarged tender gall-bladder; (3) an acute cholecystitis or cholangitis occurs with the usual signs and symptoms. The importance of regarding many of the so-called relapses in typhoid fever as manifestations of some local infection in the body, which should always be searched for if it is not obvious, requires emphasising. Primary typhoid cholecystitis occurs, apart from any past or present general typhoid infection, and the writer gives details of four cases where the gall-bladder was removed and recovery followed. In the early days of the Widal reaction its occurrence in cases of so-called catarrhal jaundice was frequently observed; it was supposed that jaundice vitiated the diagnostic trustworthiness of the reaction, but now that we know the frequency of the occurrence of a primary typhoid cholecystitis we also look on the Widal reaction as most valuable in determining the nature of the jaundice. Possibly Weil's disease is a modified form of typhoid fever, at any rate it would be wise in all cases of jaundice to undertake a bacteriological examination of the blood and fæces; if this be not feasible at any rate the Widal test should be done with the typhoid and para-typhoid organisms.

FRANK E. TYLECOTE.

Therapeutics.

Bianchi (V.). **The action of alcohol on the circulation of the blood in Man.** *Lo Sperimentale.* Anno. lxv., fasc. i.-ii.

Dr. Bianchi's experiments on the effect of alcohol on the circulation tend to the conclusions that alcohol acts upon the vessels and heart for one and a half hours after its ingestion. In a short time, varying with the dose, dilatation of the carotids and the vessels of the hand is demonstrable. Small doses have no important action on the heart, but medium doses increase the force of its contractions and large doses increase both the force and the rapidity.

Arthur Robinson.

Goldthwait. **The treatment of Hip Disease.** *Bost. Med. and Surg. Journ.* Vol. clvi., p. 193.

Open air and good hygienic conditions are just as important for tuberculosis of the hip as for that of the lungs. The usual rigid rest enforced on these patients is condemned. In early cases the author applies a plaster-of-paris splint, not controlling the movements of the knee or lower spine, and applied to the joint in that position which tends to the minimum amount of muscle spasm and irritation. This position he considers to be one of flexion to 20°, abduction to 15°, and external rotation to 10°. The patient is not kept in bed, but is encouraged to bear the weight on the leg. The plaster splint should be removed every month or so until all signs of active disease, as evidenced by pain or limitation of movement, have vanished, and then a softer leather splint, allowing of further movement should be substituted. If the position of the limb will not admit of this, or if the disease is more acute, rest in bed combined with traction is necessary, gradually bringing the leg down into the required position; then the plaster is applied, and after a few more days in bed the patient is allowed to walk. Very occasionally symptoms continue, and then there should be used either a more extensive plaster splint or a traction hip splint. Excision is very rarely necessary, and should always be considered as an extreme measure; the posterior incision gives the best access to the joint. After the operation the joint should be immobolised by the plaster splint as soon as possible, but as much shortening is probable the position should be one of exaggerated abduction, so that the shortening may be masked by tilting of the pelvis. He does not think, in the treatment of

the late deformities which may arise, that forcible correction is always contra-indicated, in spite of the possibility of a recrudescence of active disease. If this is not considered correct treatment, osteotomy is the only operation of use; this may be subtrochanteric if the ankylosis is bony, but if otherwise the division must be made through the neck, and the leg put up in the position already alluded to as the most useful. Sometimes it may be necessary to attempt the formation of a pseudo-arthrosis, particularly if both hips are ankylosed; this condition is best brought about by excising the head and the top of the great trochanter and turning in a flap of muscle to prevent bony union. Abscesses should be left alone until they approach the surface, when they should be aspirated, the aspiration being repeated when necessary.

LAWRENCE JONES.

Reviews.

"Epilepsy: A Study of the Idiopathic Disease." By W. Aldren Turner, Visiting Physician to the Chalfont Colony for Epileptics. London: Macmillan and Co. Ltd. Price 10s. net.

This is the best book that we have read on the subject. It is easy to read, and is written by one who has studied epilepsy by being in the midst of epileptics. A good account is given of the theories of the pathology of the disease, but it is patent that the author has little belief in any of them. Nor does he think that epilepsy is a mere matter of fits. His own studies have been principally from life, and his book is full of information very helpful to anyone who has an epileptic to treat.

It is interesting to find that Dr. Turner believes in the existence of a facies epileptica that is something more than a combination of bromide spots and the scars of injuries; and we wish that he had included a set of photographs to help to settle this vexed, though not very important, question.

But of much greater practical value would have been a fuller account of the management of status, for the death-rate of status seems to depend on the care with which the state is treated. At any rate, it seems to be much lower in the Colonies than elsewhere.

In his directions for the treatment of chronic epilepsy, it is to be regretted that Dr. Turner pays too much deference to the views of the theorists, and is too little guided by his own intimate knowledge of epileptics. The day will come when the profession will recognise two stages of epilepsy, so far as treatment is concerned. In the early stage, when the fits are still infrequent and not unlikely to cease, treatment will aim almost solely at preventing fits. During this short stage the character of the patient will be left to take its chance, and the various therapeutic means recommended in the text-books will be fairly tried. But if it be found after a not very long trial that the fits persist, treatment will aim at keeping the epileptic as much like his fellow-creatures as possible. The frequency of the fits will be regarded as a matter of minor importance. For treatment aimed principally against fits must, if continued long, make the patient a highly objectionable egoist. And we know from experience that in nearly all cases epileptics are sent to Colonies not because they have fits, but because their egoism makes them intolerable at home. It is the treatment rather than the epileptics that is to blame.

We cannot help believing that a neuropathic child brought up on the lines suggested on page 226 would be an intolerable nuisance both to himself and to his friends. It is the neuropathic member of the nursery who should be under the strictest discipline.

"Aids to Medical Diagnosis." By Arthur J. Whiting, M.D., M.R.C.P., Physician to the Tottenham Hospital. London: Baillière, Tindall and Cox, 1907. Pp. 152. Price 2s. 6d.

This book is intended for those who already possess a knowledge of medicine. A specially useful feature is the arrangement of the diseases affecting each system upon a clinical basis. Starting with the leading symptom or symptoms, the author groups the diseases presenting these symptoms, and points out their differentiating features. It is perhaps difficult to avoid dogmatism in a book of this nature, whose aim is to instruct rather than to discuss; yet it is misleading, in speaking of pericarditis, to state, "When there is small effusion, one not large enough to obliterate the friction sound," etc., for such a statement might lead one to infer that friction sound only occurs when the effusion is small in amount. Again, experience does not teach that in pulmonary œdema "there is slight dulness usually only of the bases," and one hardly expects to find in any recent book "that enlargement of the cardiac dulness upwards is due to the left auricle." There is a useful chapter on Fevers, and on the whole the book is likely to be serviceable if regarded, as intended, as an aid to diagnosis.

"A Text-book of Obstetrics." By Barton Cooke Hirst, M.D. Fifth edition. Philadelphia and London: W. B. Saunders and Co., 1906. Price 21s. net.

The fifth edition of this well-known book has been carefully revised, and now forms a volume of 850 pages, with over 700 illustrations. Among the many works on Obstetrics published during the last few years the text-book of Dr. Barton C. Hirst holds a high place. It is thoroughly well printed, and the illustrations are well chosen and carefully reproduced. In the present edition the chapters on Toxæmia of Pregnancy and on Puerperal Infection have been rewritten, and the most recent advances in our knowledge have been incorporated. The references to the literature of the subject are numerous, and, though not in any sense complete, will be found of considerable value.

The book is well and clearly written in a lucid and interesting style, and although the author freely expresses his personal views throughout, it constitutes a reliable guide for the student and practitioner.

"A Handbook of the Diseases of the Eye and their Treatment." By Henry R. Swanzy and Louis Werner. Ninth edition, with illustrations. Pp. 744. London: H. K. Lewis, 1907. Price 12s. 6d.

The ninth edition of this most successful text-book appears under the joint names of Swanzy and Werner, but the latter is not entirely new to the work, having been mentioned in previous editions in connection

with the tables respecting the action of drugs on the pupil. The number of pages has been increased by 66 owing to the introduction of many new illustrations, and partly to a chapter on elementary optics and paragraphs on the ophthalmoscope and the heterophorias, etc. The bibliographies at the end of the chapters in the eighth edition have disappeared in this. The value of the volume has been enhanced by the inclusion of descriptions by text and illustration of the methods of examination of the superficial parts of the eye.

The work undoubtedly still well holds its own in the very forefront of ophthalmic text-books.

"Refraction of the Eye, its Diagnosis and the Correction of its Errors," with a Chapter on the Use of Prisms. By A. Stanford Morton, M.B., F.R.C.S. Seventh edition. Pp. 76. London: H. K. Lewis, 1906. Price 3s. 6d.

This excellent little work has now attained its seventh edition. It contains clearly and succinctly put the practical problems of refraction without dipping into the mathematical problems that so often only serve to confuse the student and general practitioner. A chapter on prisms has been introduced, and some portions of the work have been re-written. It can be highly recommended.

"Manual of Pathology." By Guthrie McConnell, M.D. Pp. 523. Philadelphia and London: W. B. Saunders and Co. Price 12s net.

The writer of this work accounts for its production with a prefatory hope that it will enable the student to rapidly acquire the salient points of the subject. The book is mostly made up of condensed information, amongst which entailed inaccuracies and misconceptions are more frequent than usual in text-books. Many of the dogmatic definitions cannot but be unintelligible to the beginners, and even an experienced pathologist might have some difficulty in places in fathoming the meaning.

There is too much looseness of expression for a student's manual. Thus "dyspnœa is a slight lack of oxygen," and "the thyroid secretion when absent gives rise to myxœdema," and other sentences too numerous to mention are not characterised by that accuracy which we expect in science.

The pictures throughout are good, but these are mostly borrowed (with acknowledgment) from other works, and we are loth to see perpetuated an illustration of acute desquamative nephritis—really an artefact due to bad technique and dating back some three decades. Fifty pages are occupied with instructions for post-mortem and laboratory work. The publishers have produced the work in a tasteful manner. But we cannot imagine to what class of student it will appeal.

"Aids to the Diagnosis and Treatment of Diseases of Children." By J. McCaw, M.D. Third edition. London: Baillière, Tindall and Cox, 1907. Price 4s. 6d.

This little book has been brought up-to-date, and many new subjects are now included. It forms one of the Students' Aid Series, and, as a book which presents the subject in a condensed form and at the same time treats of practically all the medical diseases of children, we can recommend it. Perhaps a fuller reference to the surgical treatment of certain diseases would have been an advantage, for we find no reference to tendon-grafting for the relief of the paralyses following anterior poliomyelitis. We cannot agree with the treatment recommended for empyema, for it is better to ensure free drainage as soon as the presence of pus is demonstrated than to waste time by tapping or by methods which do not ensure free drainage. The importance of careful asepsis in the dressing of such cases and the danger of irrigation are not sufficiently emphasised. It is also stated that a premature ossification of the spheno-basilic suture occurs in sporadic cretinism. Although this statement is made on the authority of Virchow, we cannot agree that such is the case, but we understand that this deformity is present in the Mongolian type of mentally deficient child. The appendix and the list of prescriptions give the details of various methods of treatment, and should be very useful.

"A Text-Book of Physiology for Medical Students and Physicians." By W. H. Howell. Illustrated (267 figures and several plates). Pp. 905.

Unlike the previous work on this subject issued by Prof. Howell, of Baltimore—a work written by several authors—this book is the product of Dr. Howell's long experiences as a teacher, investigator and a writer. Of histology there is little—just sufficient to remind the reader of the bold facts. The work is divided into ten sections, dealing successively with Muscle and Nerve, Central Nervous System, Special Senses, Blood and Lymph Circulation, Respiration, Digestion and Secretion, Nutrition and Heat, Reproduction. There is an excellent appendix devoted to Proteids and their Classification and to Diffusion and Osmosis.

Where all is so good it is difficult to single out any section as better developed than another. We have nothing but praise for this work, one of the most excellent summaries and readable and up-to-date account of the present state of physiological science.

"First Lines in Midwifery." By G. Ernest Herman, M.B. (Lond.), F.R.C.P. New edition; pp. 222; 83 illustrations. London, etc.: Cassells and Co., 1907. Price 5s.

The new edition of this deservedly popular "Guide to Attendance on Natural Labour for Medical Students and Midwives" constitutes really the fourth edition of the book, although since its first appearance in 1891 fresh issues have been called for nearly every year. In the present

issue the whole of the text has been carefully revised, and the rules of the Central Midwives Board have been added with some explanatory comments. The text of the book is characterised by an admirable clearness, and on the whole the teaching is sound and reliable. We are surprised to find, however, that although the author gives definite directions about disinfecting the accoucheur's hands and instruments, he says nothing about cleansing and disinfecting the patient's perineum either before or during labour, or about keeping it aseptic afterwards. This is surely a natural corollary to his chapter on "Germs, Disease and Antiseptics." He apparently still relies on occasional vaginal douching, which, as a matter of routine, is now fast becoming obsolete. Again, in the arrest of post-partum hæmorrhage no reference is made to the undoubtedly life-saving method of compressing the aorta and raising the foot of the bed, kneading and compression being solely relied upon.

"Cancer: Its Treatment by Modern Methods." By Edmund Owen, Hon. LL.D. (Aberdeen), Consulting Surgeon to St. Mary's Hospital, London. London: Baillière, Tindall and Cox, 1907. Price 1s. net.

This is the Bradshaw Lecture for 1906, published in pamphlet form. Although the lecture contains nothing enlightening upon the subject of cancer, it is a fairly clear and terse statement of the present position of its surgical treatment. It should prove of interest to the cultured layman, as well as to the general practitioner, who has perhaps been unable to keep abreast of recent literature on the subject.

"Eye Injuries and Their Treatment." By A. Maitland Ramsay, M.D. Pp. 210; 25 plates. Glasgow: James Maclehose and Sons, 1907. Price 18s.

Great credit is due alike to author and publishers for the production of this handsome volume. The lectures upon which the text is based, were originally prepared for post-graduate courses; their scope is essentially clinical and practical, all reference to theories being, as far as possible, avoided. In his account of the various traumatic lesions of the eye and their treatment, the author draws freely upon his large personal experience. The matter, literary style and illustrations are all excellent. Altogether, the book forms a notable contribution to medical literature in the truest sense of the word. It should be on the shelf of every general practitioner as well as of each ophthalmic surgeon.

"The Diagnosis and Treatment of Intussusception." By Charles P. B. Clubbe. Pp. 92. Young J. Pentland, 1907.

The author summarises in this brochure his personal experience of no less than 144 cases of intussusception. The essentially practical style of the work renders it a very valuable contribution to the surgery of this type of intestinal obstruction. The history and classification of the subject are dealt with briefly, but sufficiently, whilst special attention is devoted to the question of diagnosis. Under this heading an admirable account of the symptoms and signs is given. We are especially glad to note the author's comments on the delusive condition of apparent well-being which is apt to be found during the early hours of an intusussception. Treatment is described in practical and helpful fashion. The old-fashioned method of inflation is retained as an adjunct to, but not a substitute for, laparotomy. The author rightly insists on rapidity of operation, minimum amount of handling and avoidance of evisceration, and considers that these ends are attained by a preliminary use of inflation, so that the tumour, unfolded to within its last few inches, is readily reached and promptly dealt with through a small abdominal incision. The administration of the anæsthetic is of supreme importance in these cases, and the author rightly insists on this fact, and embodies his views on this subject in a special section of the work.

"Surgery of the Rectum." By F. C. Wallis. Pp. 168. London: Baillière, Tindall and Cox, 1907. Price 6s. net.

We have read this work with great pleasure, and regard it as the best of the recently published books on rectal surgery. The book, though small in size, is very full of matter, and its contents throughout are of an essentially practical and helpful type. The inflammatory diseases of the rectum and their sequelæ are described in simple and lucid fashion, which brings out very clearly the intrinsic relations of these various diseases and their common origin in ano-rectal ulceration. We are glad to note that the Whitehead operation for hæmorrhoids is regarded as the best, and a very clear account with good illustrations is given of the method. The chapters on new growth are especially good, the various methods of treatment being clearly and concisely described. A brief account of vaginal excision of the rectum might with advantage be added here, as we have found it a simple and satisfactory method in selected cases. We can most heartily recommend the book to the student as presenting a clear and logical account of a subject of real importance to him. The very practical, even dogmatic, nature of the work renders it also of value to the practitioner, who will find here all the outlines of a natural and commonsense treatment devoid of all controversial trappings and untampered by lengthy

descriptions of procedures which he is never likely to see or undertake. In brief, the work embodies the personal convictions of a scientific observer of wide experience, and as such it cannot fail to bring conviction to the mind of the reader.

"Police Surgeon's Emergency Guide." By Dr. C. Graham Grant. London: H. K. Lewis. Price 2s.

This is a little book calculated to be of considerable assistance, not only to police surgeons, but to all medical men in general practice who may at any time find themselves mixed up in criminal cases. In addition to the special duties of the police surgeon there are admirable and concise details on the differential diagnosis of drunkenness, poisoning, or fractured skull, etc., also there are described the chief points requiring attention in cases of suspected murder, rape and other criminal offences. There is, further, an epitome of the first aid required in poisoning cases and other useful tables. It is stated on p. 63 that in opium poisoning the pupils are somewhat dilated. It is true that in the late stages the pupils may be dilated, but in the earlier stages contraction of the pupils is one of the best indications of this kind of coma. The whole paragraph on this subject is difficult to understand, and requires re-writing. But this is one of the few faults of a very useful pocket-book.

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THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

THE ETIOLOGY AND MORBID ANATOMY OF CANCER OF THE STOMACH.

(Based on the Post-Mortem Records of St. George's Hospital.*)

By George G. Packe, M.A., M.B. (Cantab.), M.R.C.S., L.R.C.P.

Etiology. It has been agreed by competent authorities that primary carcinoma arises more commonly in the stomach than in any other internal organ. The accuracy of this statement is borne out by the examination of the post-mortem records of St. George's Hospital during a period of ten years, namely, that from 1890 to 1900.

All autopsies performed on cases of cancer of internal organs were collected and classified with the following results:

Organ.	Number of Cases.	Percentage.
Stomach ...	60 ...	26·5
Œsophagus ...	36 ...	15·9
Colon ...	34 ...	15·0
Rectum ...	18 ...	7·9
Liver ...	12 ...	5·3
Kidney ...	12 ...	5·3
Pancreas ...	11 ...	4·8
Gall-bladder ...	11 ...	4·8
Uterus ...	11 ...	4·8
Bladder ...	7 ...	3·0
Mediastinal glands ...	7 ...	3·0
Ovary ...	5 ...	2·2
Small intestine ...	2 ...	0·8
Ureter ...	1 ...	0·4
	227	99·8

* Being a thesis submitted for the degree of M.B. (Cantab.)

It will be seen that cancer of the stomach heads the list with a large preponderance over that of the organ which comes next in frequency. Mr. Bryant,[1] in 1894, pointed out that there had been a marked increase of late years in the number of deaths from malignant disease in general. Mr. Roger Williams [2] has estimated that the proportionate cancer mortality is four times greater than it was fifty years ago.

Trustworthy post-mortem records at St. George's Hospital may be said to begin in 1856. If, from this year, as a starting point, a comparison is made of the percentages of necropsies performed on cases of cancer among all other necropsies made, the results found for a consequent series of quinquennial periods shew that the percentage increased from 4·6 in the first period to 12·3 in the last.

Period.		Percentage.
1856 to 1860	...	4·6
1861 to 1865	...	5·4
1866 to 1870	...	8·7
1871 to 1875	...	7·6
1876 to 1880	...	7·01
1881 to 1885	...	9·0
1886 to 1890	...	8·4
1891 to 1895	...	10·5
1895 to 1900	...	11·12
1901 to 1905	...	12·3

Has cancer of the stomach increased in frequency?

The post-mortem records of St. George's Hospital shew that the ratios of increase of primary cancer of the stomach are out of proportion to the ratios of increase of primary cancer of other organs.

To shew that this is the case, the same quinquennial periods as before are taken, and the (a) percentages of necropsies performed on cases of primary cancer of the stomach among necropsies performed on other cases of primary cancer, are compared with (b) the percentage of necropsies performed on all cases of cancer among the total number of necropsies performed, these last figures have just been given.

A.		B.		Period.
4·6	...	2·2	...	1856 to 1860
5·4	...	16·1	...	1861 to 1865
8·7	...	12·7	...	1866 to 1870
7·6	...	14·6	...	1871 to 1875
7·01	...	15·06	...	1876 to 1880
9·0	...	19·2	...	1881 to 1885
8·4	...	17·02	...	1886 to 1890
10·5	...	23·6	...	1891 to 1895
11·12	...	16·8	...	1895 to 1900
12·3	...	14·5	...	1901 to 1905

The percentages (b) although not increasing uniformly shew during the later periods a ratio of increase to those of (a) of between 3=2 and 4:2.

Dr. Payne [3] ascribes this increase to improved methods in the diagnosis of gastric carcinoma. Perhaps this is true to a certain extent, but the statistics of St. George's do not support Mr. Roger Williams' assertion that the increase of cancer has affected all parts of the body without disturbing the proportionate ratios.

As to the difficulty in diagnosis of carcinoma of the stomach, the Registrar's notes for the St. George's cases would seem to shew that the condition was recognised before death took place in most of the patients.

Sex. The total number of cases found during the examination of the post-mortem records at St. George's was 228.

Of these 228 cases, 148 occurred in male and 80 in female subjects, thus making the proportion of male cases to female cases 1·85 to 1.

For comparison with the results from St. George's, the figures quoted by Brinton, Welch,[5] Reiche [6] from his Hamburg statistics, and Osler and McCrae [7] from the Johns Hopkins Hospital are given.

	No. of Cases.		Males.		Females.		Proportion.
St. George's Hospital	228	...	148	...	80	...	1·85 to 1
Brinton	—	...	—	...	—	...	2 to 1
Reiche	4237	...	2387	...	1850	...	1·8 to 1
Johns Hopkins ...	150	...	126	...	24	...	5 to 1

Age. The ages of the cases examined varied from 16 years in the youngest subject to 80 years in the eldest. It may be here stated that in both these cases the growth was pyloric in position.

Here are given in tabular form the number of cases which occurred in each decade in the St. George's series, with the percentage, and for comparison the percentage statistics of three of the above mentioned authorities.

Decade.	No. of Cases.	St. George's %	% Osler and McCrae.	% Welch.	Reiche's Hamburg %
10—20	1	0·43	0	0·1	0·04
20—30	8	3·4	4	2·7	0·87
30—40	29	12·7	11·3	12·3	5·85
40—50	60	26·3	25·3	24·5	14·15
50—60	73	32·01	32·6	30·4	25·94
60—70	47	20·6	24	21·0	32·16
70—80	10	4·3	2·6	6·8	18·13
Over 80	0	0	0	1·15	2·76

These statistics from St. George's show that the decade from the years 50 to 60 is the most fatal period.

This result agrees with those of Osler and McCrae and Welch. Reiche's figures show a singularly large percentage for the decade 70-80—18·13 per cent., as compared with the St. George's percentage of 4·3.

The average age of the cases combined was 49·3 years, while the average age for male cases was 51·1 years, and that for female cases was 46·2 years.

Family History. The amount of data from the St. George's records sheds very little light on the importance of a family history of cancer as an etiological factor.

The Registrar's notes make no mention of family history or hereditable disease until recent years. It is not until 1881 that mention is found of a woman's mother having died of cancer.

Since that date there have been 119 cases of primary cancer of the stomach, among which has been found a family history of cancer in eight cases.

These histories included the followng:—

	Organ.
2 fathers	cancer of (not given)
1 grandfather	cancer of the breast
2 mothers	cancer of (not given)
1 mother	cancer of the liver
1 sister	cancer of (not given)
1 "family history"	(no person specified)

This gives a proportion of one case in fifteen giving a family history of cancer.

The decades in which these cases occurred were:—

40—50	3 cases
50—60	2 cases
60—70	2 cases
70—80	1 case

From these eight cases it is not possible to draw any conclusions as to the tendency of cancer to develop at an earlier age in those who shew an hereditary disposition. It may be said, however, that in five of these cases the disease had developed at an age later than the average, which was found to be 49·3 years.

Syphilis. It has been noted by several writers that carcinoma rarely occurs in the subjects of syphilis. In this series of 228 cases only four gave a history of syphilis.

This is certainly curious, when it is considered that all the cases were drawn from the ranks of hospital patients, among whom syphilis is no stranger.

Occupation. Occupation does not appear to play any part in the etiology of gastric cancer. The greater number of male cases occurred among "labourers," but this is not noteworthy, seeing the greater proportion of unskilled to skilled labour. The occupations followed other than that of labourer were so diverse as to be of no interest.

Conjugal Condition. Among the 80 female cases examined 16 occurred among women who were married, or who were widows, a proportion of unmarried to married or widows of 5 to 1. From this it does not seem that maternity has any influence in the incidence of gastric cancer among females.

Tuberculosis. At one time it was thought that tuberculosis

and cancer were each inimical to the presence of the other, so that the subject of cancer was not likely to become the subject of tuberculosis and conversely.

Professor Osler in his System of Medicine, 6th edition, states that lesions in the lung due to tubercle were found in 275 out of 1000 post mortems noted by him. In the St. George's series of 228 cases of gastric cancer tuberculous lesions of the lung were noted in 17·5 per cent. If Professor Osler's percentage of 27·5 be taken as an average for all cases it appears that these cases of gastric cancer suffered less from tuberculosis of the lungs than those cases dying from other causes.

Old Gastric Trouble. Old gastric trouble is important as an etiological factor in primary cancer of the stomach in two ways: First, may cancer occur as a late result of gastric ulcer? Second, may cancer occur in a stomach as a result of chronic gastritis?

In answer to the first question, three of the cases undoubtedly shew that it may.

(a) In a female, aged 47, there was an old gastric ulcer near the pylorus on the posterior wall close to the lesser curvature. This ulcer had thickened edges, and under the microscope the thickening was found to be due to spheroidal-celled carcinoma. In addition to this there was a secondary growth in a lymphatic gland externally, which microscopically was also spheroidal-celled carcinoma.

(b) The stomach of a male, aged 69 years, showed a small growth at the pylorus, which evidently arose from an old gastric ulcer at the pyloric orifice on the anterior wall near the lesser curvature. The microscope shewed it to be a spheroidal-celled carcinoma with scanty fibrous tissue.

(c) The stomach of a male, aged 34 years, shewed an old healing ulcer on the posterior wall, with considerable infiltration surrounding it. Under the microscope the infiltration proved to be due to spheroidal-celled carcinoma.

(d) A man, aged 80 years, gave a history of symptoms pointing to gastric ulcer fifteen years previously. At the necropsy there was found, beside the growth, the scar of an old gastric ulcer.

(e) The patient, a woman aged 47 years, gave a history of hæmatemesis two years previously.

In reply to the second question, only 4 females and 5 males gave a history of dyspepsia. The histories varied in length from their whole lives to the three or four years preceding their admission into St. George's Hospital.

Alcohol. Eight of the cases, all of whom were males, had taken alcohol to excess. Alcohol, being an irritant to mucous membranes, might when continuously taken, further the tendency of any group of cells, if so disposed, to acquire the habit of growth.

Mention must be made of one case in which chronic irritation is considered.

A male, aged 58 years, had all his life been a carpet layer, and as such had swallowed many tacks. Many small wounds of the gastric mucous membrane must have occurred. Perhaps one spot frequently wounded may have at length taken on a malignant character, as in the case of the gastric ulcers.

Morbid Anatomy. During the period in which the 228 cases of primary carcinoma were collected, there were several cases of primary sarcoma of the stomach, and a few cases of secondary carcinoma and sarcoma of the same organ. The aid of the microscope at St. George's Hospital, in diagnosing the histological nature of the disease, became general in 1880. Hence it follows that the investigator of the morbid anatomy of the earlier cases must accept the terms "fungoid" and "encephaloid" as cases of malignant disease. The nature of the growths and the results of the investigation are therefore to be regarded critically by the light of the more thorough and recent researches in later cases.

The general features of the St. George's series of 228 cases as regards the position of the growth are given in tabular form, together with the statistics for comparison of Welch's series of 1300 cases, and of Osler and McCrae's series of 42 cases.

Situation.	Cases.	Males.	Females.	%	% Osler and McCrae.	% Welch.
Pyloric	127	85	42	55·7	53·3	60·8
General Involvement	23	15	8	10·08	13·3	4·7
Lesser Curvature ...	19	14	5	8·3	11·0	11·4
Greater Curvature ...	8	3	5	3·5	6·6	2·6
Cardia	20	15	5	8·7	6·6	8·0
Posterior Wall... ...	6	3	3	2·6	6·6	5·2
Fundus	9	5	4	3·9	2·2	1·5
Anterior Wall	16	6	10	7·01	—	—

Three distinct forms of pyloric carcinoma can be distinguished:

(1) In which the growth is strictly limited to the pylorus—of this form there are 74 cases.

(2) The pyloric end with the pylorus is invaded to a greater or lesser extent; of this variety there were 18 cases.

(3) The growth extends into the duodenum. This occurred in 11 cases.

Stenosis of the pylorus was present in 64 of the cases, where the growth was situate at the pylorus or pyloric end.

Dilatation of the Stomach. In 44 of the cases shewing disease of the pylorus or pyloric end there was dilatation of the stomach.

Stenosis of the pylorus and adhesions of the stomach to surrounding parts are the two chief causes of dilatation. Stenosis alone is not the only cause, as it was only present in 24 out of the 44 cases, while in 8 cases of dilated stomach there was no stenosis, but there were adhesions of the viscus to surrounding parts.

The effect of the adhesions on the stomach is to prevent it expelling its contents and contracting in the proper manner, leading to dilatation of the organ under the excessive work it is then called upon to perform. As would be expected where stenosis is present with the adhesions, there occurs the greatest dilatation, and this was found to be the case in the 10 cases where both these conditions were present together.

Metastases. Secondary deposits occurred in 168 cases, or in 73·6 per cent.

Secondary deposits were not found in 60 cases, or 26·3 per cent.

The position of the primary growths in the cases where no metastases were found was as follows:—

Pyloric	44 cases
Entire stomach ...	2 cases
Cardia	5 cases
Greater curvature ...	1 case
Lesser curvature ...	3 cases
Walls	5 cases

The position of the metastases with the numbers which occurred in each position is given below in tabular form.

They are grouped into those which occurred in lymphatic glands and those which occurred in viscera.

Lymphatic Glands.

Mesenteric	34	Retro-peritoneal	3
Regional	19	Pelvic	2
Portal	10	Bronchial	2
Pancreatic	10	Coeliac axis	2
Lumbar	8	Supra-clavicular	1
Mediastinal	5	Sub-clavicular	1
Aortic	5	Cervical	1
Œsophageal	4	Inguinal	1
Tracheal	3	Rectal	1

Viscera.

Liver	71	Diaphragm	3
Omenta	50	Appendix	3
Peritoneum	27	Falciform ligament liver	3
Pancreas	19	Umbilicus	2
Small intestine	15	Pelvis	2
Suprarenals	7	Round ligament liver	2
Large intestine	6	Pericardium	1
Ovaries	6	Heart	1
Spleen	6	Ribs	1
Lung	5	Œsophagus	1
Pleuræ	5	Thyroid	1
Kidney	5	Linea alba	1
Gall-bladder	4	Uterus	1
Bladder	3	Rectum	1

Adhesions. Adhesions were noted in 78 cases, or in 34·2 per cent. For adhesions to be established, it is necessary that perigastric inflammation should occur.

In cancer of the stomach, the hydrochloric acid secretion is diminished greatly, or entirely absent. Normally organisms gaining entry into the stomach are destroyed by the acid secreted. Where this secretion is faulty or absent they can multiply without hindrance, and produce their toxins. These toxins gain an entrance into the subserous lymphatics in greatest quantity where ulceration and fungation of the growth are present, for these processes assist their entry.

On examining these 78 cases it was found that ulceration and fungation had taken place in 51 cses, or in 65·3 per cent.

The position of the growth for anatomical reasons largely decides where and to what parts the adhesions shall take place. Thus disease of the greater curvature or pylorus usually gives rise to adhesions to the right lobe of the liver, while disease of the cardia leads to adhesions either to the liver or to the pancreas.

Again, cancer of the posterior wall tends to cause adhesions to the pancreas, and that of the greater curvature to the transverse colon.

Thus the situations of the growth may be shewn in tabular form with regard to its adhesions to the three chief organs neighbouring to the stomach.

	Pylorus %	Cardia %	Lesser Curvature %	Great Curvature %	Posterior Wall %
Liver	40·4	42·3	54·0	19·8	0
Pancreas	24·7	51·6	23·3	57·6	73·4
Trans. colon ...	3·0	7·2	0	80·7	0

With regard to the number of adhesions noted to various parts or organs—the liver comes first with 33, the transverse colon second with 32, and the pancreas next with 30.

The organs coming next with lesser number of adhesions to the stomach were:—

Omentum	12
Gall bladder	9
Spleen	8
Small intestine	6
Duodenum	3
Diaphragm	2
Left suprarenal ...	2
Aorta	1

Perforation. Perforation was found to have occurred in 30 cases, giving a percentage of 13·5.

This number—13·5 per cent.—is much higher than those given

by others. Thus Osler and McCrae in their series of 126 cases found perforation in 4 per cent., and Brinton gives the number 3⅓ per cent.

The position of the growth in the 30 cases, with the percentage among the total numbers of growths occurring in those positions is here given.

Growth Position.		Total Number.	No. Perforating.
Pyloric	8	... 127	... 6·2
Anterior wall	5	... 16	... 31·2
Entire	5	... 23	... 21·7
Small curv.	4	... 19	... 21·0
Cardia	3	... 20	... 15·0
Great curv.	2	... 8	... 25·0
Posterior wall	1	... 6	... 15·7
Fundus	1	... 9	... 11·1
Pylorus and Gt. curv.	1		

The relatively greater number of perforations for a particular form was 31·2 per cent. for carcinoma of the anterior wall.

As in gastric ulcer the anterior wall is the usual seat of perforation, so here in cancer the movement of the abdominal parieties prevents the walling in of the growth with efficient adhesions.

Results of Perforation. General peritonitis occurred in 7 cases, while in 6 cases the peritonitis was localised and resulted in abscess enclosed by adhesions. One of these abscesses burst externally. Perforation into a viscus also occurs, and happened in four of these cases of localised abscess. In four cases the left lobe of the liver was invaded, and by means of adhesions formed part of an abscess cavity. In one case the pancreas had been burrowed into, and converted into an abscess cavity. Perforations also occur into the hollow viscera of the intestinal canal. The most common viscus to be perforated in this way is the transverse colon. In the St. George's series perforation into the jejunum took place once, and perforation into the transverse colon four times.

Fistulæ. Besides the four gastro-colic and one gastro-jejunal fistulæ mentioned above, there were two cases in which gastro-cutaneous fistulæ were established. These were not the result

of the perforation of an abscess, but of the involvement of the anterior abdominal wall by the disease, which had broken down after it had eaten its way through.

Morbid Histology. Accurate histological examinations were made in 57 of the cases.

The classification which has been adopted is on the same lines as that of Sir Cooper Perry and Dr. Shaw into the groups (1) cylindrical celled carcinoma and (2) spheroidal-celled carcinoma.

In 19 cases the microscopic report was that of cylindrical-celled carcinoma, and in 38 cases spheroidal-celled carcinoma.

The incidence of the two varieties among the growths occurring in various parts of the stomach was as follows:—

	Pylorus.	Small Curv.	Great Curv.	Entire Stomach.	Anterior Wall.	Posterior Wall.	Cardia.
Cylindrical-celled carcinoma	11	2	2	1	1	0	2
Spheroidal-celled carcinoma	18	4	0	5	3	4	4

Cylindrical-celled carcinoma thus shews a decided preference for the pyloric end of the stomach. This preference is no doubt due to the nature of the secreting glands found in this region of the gastric mucous membrane.

As to the relative incidence of metastases and ulceration in these two forms there does not seem to be any difference.

	Ulceration.	Metastases.	Metastases in Glands.	Metastases in Liver.	Metastases in Peritoneum.
Cylindrical-celled carcinoma	12	15	10	11	8
Spheroidal-celled carcinoma	16	24	19	14	13

Secondary Carcinoma of the Stomach. During the examination of the post-mortem records, there were found 19 cases of secondary carcinoma of the stomach. They are really only of interest pathologically, except in so far as if found during life, they would contra-indicate the attempt to remove the primary focus by operation.

The position of the primary growths were as follows:—

Œsophagus	7 cases
Pancreas	6 cases
Gall bladder	7 cases
Peritoneum	1 case
Liver	1 case
Descending colon ...	1 case
Trans. colon	1 case

The greater number of these are not to be regarded as truly metastatic, but rather as cases of extension of the disease from the primary focus. This especially, where the primary growth was in an organ in direct relation with the stomach.

But in the cases where the lesion is in the œsophagus above the stomach in the course of the alimentary canal, it is not impossible that a small portion of growth should pass into the stomach, and, becoming implanted on the mucous membrane, develop into a true metastasis.

Conclusions Drawn from the Post-mortem Records of St. George's Hospital.

1. That primary cancer arises more frequently in the stomach than in any other internal organ.

2. (a) That, though cancer in general is on the increase, yet the increase of cancer of the stomach is greater proportionately; (b) That this increase is a real one and not due to improved methods of diagnosis.

3. That males are more frequently the subjects of cancer of the stomach than females, the proportion being 1·85 to 1.

4. (a) That the most fatal decade of life for cancer of the stomach is from 50 to 60 years. In this period 32·01 per cent. of the cases occurred; (b) That the average age for all cases of both sexes is 49·3 years, the average age for men being 51·1 years, and for women being 46·2 years.

5. That rarely among cases of cancer of the stomach is a history of syphilis forthcoming.

6. That it is possible that a subject who has had tuberculosis of the lung is less likely to suffer from cancer of the stomach than a subject whose lungs present no tuberculous lesions.

7. That neither occupation in the case of both sexes, nor the marriage state in the case of females are factors in the etiology of cancer of the stomach.

8. That cancer may follow as a late result of gastric ulcer.

9. That 55·7 per cent. of growths occur at the pyloric end of the stomach.

10. That perforation of the stomach occurs most frequently when the growth is situated on the anterior wall.

11. That cylindrical-celled carcinoma shews a preference for the pyloric end of the stomach, while the largest number of cases of spheroidal-celled carcinoma were of the form invading the entire stomach.

12. That the histological nature of the growth has no effect on the incidence of metastases, or of ulceration.

13. That the œsophagus is the chief seat of the primary growth in secondary cancer of the stomach, the pancreas following next in order of frequency.

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A CASE OF ACUTE DILATATION OF THE STOMACH.

By E. D. Telford, M.A., B.C., F.R.C.S.,

Surgeon, The Manchester Hospital for Sick Children, Pendlebury.

Acute dilatation of the stomach is a rare disease of unknown origin, difficult of diagnosis and very fatal in its issue. For these reasons it is advisable to record authentic cases of the disease whenever encountered, since it is only by the accumulation of records that we may hope to improve our knowledge of the condition and in particular to facilitate early diagnosis. This is the more imperative since as the recorded cases show the disease is in its early stages very amenable to treatment in the shape of evacuation and lavage.

The following case is, I regret, lacking in some important details. The case was not seen during life by any medical man and consequently the clinical history is derived entirely from the statements of the parents. My own knowledge of the case is obtained from a post-mortem examination carried out on the order of H.M. Coroner for the City of Manchester, to whom I am indebted for permission to publish the record.

J.W., male, 16 years, followed his work as a draper's assistant until a late hour on a Saturday night. His father, who worked with him, states that during the latter half of the day he "seemed poorly," but made no definite complaint. He reached home about midnight and then complained of severe pain in the upper half of the abdomen. He went to bed and was given two Beecham's pills. These failed to produce any motion, but the boy said he felt better on Sunday morning. He still had attacks of colicky pain and remained in bed during the day. There was no movement of the bowels and no vomiting. His condition showed no change during Sunday night.

On Monday morning he began to vomit a reddish yellow fluid in very large quantities. In all he vomited five times during the day, and on each occasion a large amount of similar fluid was brought up. The parents then gave him a mixture obtained by them from a local herbalist. This mixture contained unknown,

but probably very small, quantities of a watery extract of chionanthus, ipecacuanha and hydrastis. The vomiting continued unaltered during Monday night and Tuesday morning, and in the afternoon the boy said that he felt better and got out of bed with the intention of going to stool. It is not known if any motion was passed but on returning to the bedroom it was clear that his condition was worse. He was breathing very rapidly and died within a few minutes of reaching his bed. Death thus occurred within three days from the onset of the disease and in thirty-five hours from the first act of vomiting.

A post-mortem examination was made on the following evening. The body was that of a poorly developed and somewhat emaciated youth. The head was lying in a quantity, about half a pint, of fluid which had escaped from the mouth and nose. This fluid was reddish yellow in colour and had a distinctly fœtid but not fæcal odour. It contained in suspension innumerable flocculi which sank on standing, leaving a clear reddish fluid behind.

The abdomen was moderately distended, especially above the umbilicus, and palpation showed the existence of a large encysted fluid collection.

On opening the abdomen, the stomach was found to be enormously distended, filling the upper half of the abdomen and extending well below the level of the umbilicus. It contained six pints of fluid of the same nature as that already described. The wall of the stomach was very thin, deeply congested, and showed many small submucous hæmorrhages on its internal surface. The duodenum was involved in the dilatation. The pyloric ring was represented by a scarcely perceptible thickening and the duodenum was dilated to a channel with a diameter varying between three and four inches. The wall was thinned and the valvulæ almost obliterated. The distension was limited to the first and second portions of the viscus. The third portion, like the rest of the intestinal tract was collapsed and almost empty.

I had previousy eviscerated the abdomen and was unfortunately unable to satisfy myself that the superior mesenteric vessels had actually constricted the gut. It was only possible to affirm that the distension of the duodenum ceased at the point at which the vessels cross. The small intestines had been pushed downwards by

the dilated stomach and were somewhat tightly packed in the pelvic cavity. About two feet from the duodeno-jejunal flexure there was an intussusception, two inches in length, but as the gut above it was collapsed and as the invagination itself had all the characters of an agonic origin it could have had no causal relation to the dilatation of the stomach. The examination disclosed nothing further of importance beyond the fact that all the viscera exhibited passive congestion to a marked degree.

The case appears to have been a typical instance of acute dilatation of the stomch, but the exciting cause in this case is unknown. From a review of the recorded cases one may gather that the condition has been seen to arise during convalescence from acute and debilitating illness; after operations, some concerning but others quite independent of the stomach; after errors in the shape of unusually free indulgence in solids or liquids and after the administration of hypnotic drugs. It appears certain that not one of these causes was present in this case.

In endeavouring to obtain an accurate account of the boy's previous history, one fact of much interest was discovered. The parents were able to recall no less than six previous attacks, all similar in character to the fatal one. These attacks had been seen during the three years before death. In each attack there had been severe colicky pain in the abdomen for two or three days. Eventually a profuse vomit of bile stained matter had occurred with prompt and complete recovery.

In the light of the fatal attack it is reasonable to suppose that the previous seizures were instances of the same disease in which the stomach had succeeded in emptying itself and regaining its shape and tone. The failure of this vis medicatrix naturæ, determined the fatal attack.

CHRONICLE.

Medicine.

ESSER. **The etiology of Rickets.** *Muench. med. Woch.*, April 23, 1907. IN a vey interesting paper Esser passes in review the various hypotheses which have been advanced to explain the nature and origin of rickets, for a detailed discussion of which the reader is referred to a paper by Fischl and a number of monographs by various writers, to which full references are given. These hypotheses have either been discredited or have proved inadequate to meet all cases, and the writer was convinced that the problem must be attacked from a new direction. His present position has been reached through both clinical and experimental investigations.

A congenital origin has been suggested whereby rachitic bone changes may develop *in utero* (the so-called fœtal rickets), or, short of that, the foundations of rickets may be laid during intra-uterine life, and a bias created towards the later development of the disease under the influence of external conditions. "Fœtal rickets," however, has been narrowed down to the dimensions of a rare and rather doubtful entity, and to look for causative factors in intra-uterine life involves the dragging in of maternal and parental influences, and, as Stoeltzner says, merely shifts all the difficulties back to the foregoing generation.

As to the unsuitability of diet, it must be remembered that a certain number of even breast-fed infants become rickety .Siegert found rickets in 31½ per cent. of 923 infants fed on the breast only till over 4½ months. Chronic digestive disturbances again tend not to rickets but to atrophy. Deficient ingestion or absorption of lime salts, abnormal acidity of the blood interfering with their deposition in the tissues, have been refuted by the established fact that rachitic bone changes still occur when none of these conditions are present. The defect of lime in the bones in rickets depends upon their inherent inability to take up lime salts, and not to any defect in the pabulum supplied. Climatic and hygienic factors are also inadequate; the microbic theory of Oppenheimer remains unproved, as also those which are based upon insufficiency of internal secretions (*e.g.*, adrenal or parathyroid inadequacy).

The writer goes on to describe in detail the bone changes of rickets, and sums up thus:—The essence of the anatomical bone changes of rickets lies in an increased formation of an imperfect cartilaginous and osseous tissue, and often along with this an abnormally increased absorption of bone substance already formed. How then do these changes come about? Esser approached the problem by way of the blood.

1. In a series of chronically overfed children, without demonstrable intestinal trouble, he found (1) a persistent leucocytosis of 15,000 to 20,000; (2) a relative increase of mononuclears; (3) an invasion of myelocytes and lymphoid marrow cells; and (4) an alteration of the "neutrophile blood-picture." Arneth has found in adults that considerable uniformity exists in the relative proportions of neutrophiles containing different numbers of nuclear segments, the multi-segmented forms preponderating in health, whilst in infectious diseases the neutrophile picture undergoes a reversal. Applying this method, Esser found in healthy breast-fed infants a proportionately greater number of multi-segmented neutrophiles than in hand-fed infants; that in children with gastro-intestinal troubles nuclei with one or two segments considerably preponderate, and that in chronically overfed infants without obvious bowel troubles the multinuclear neutrophiles are diminished and the picture tends to be reversed.

2. In children suffering from uncomplicated rickets there is also a leucocytosis, both of polymorphs, which are known to arise in the bone marrow, and of mononuclears which have probably the same origin.

This similarity of the blood-picture in rickets and in chronic over-feeding suggested that the leucocytosis in both cases was the expression of an abnormal marrow function, which might point to an association between the two conditions. Monti's and Heubner's observations lent confirmation to this idea. Interrogation directed to this point revealed in all his cases of rickets, both in breast and in hand-fed infants, whether of rachitic or non-rachitic parents, that over-feeding had taken place. In a case of breast-fed twins, of which one only was rickety, the mother admitted having intentionally overfed this one at the expense of the other on account of its originally weak condition.

To meet the objection that the association of rickets and over-feeding might be purely accidental he instituted some experiments on animals. A number of young rats were taken from the same litter. Some were restricted while the others were given an excessive diet of milk and meat. The latter developed bone-changes identical with those in rickets. He concludes that chronic over-feeding, which occurs more readily in artificial than in breast feeding, gives rise to an increased demand upon the bone-marrow for the formation of a larger number of leucocytes. It is uncertain, however, whether this increased demand is merely to meet increased digestive requirements or is to be regarded as a protection against the toxic products of decomposition of albumins. The hyperæmia of the marrow is thus explained, and the overstrain of the medullary function results in an insufficiency as evidenced by the blood-picture, and in the increased formation of an imperfect (osteoid) tissue unsuitable for bone formation.

The nervous phenomena are explainable on the same grounds—over-feeding, and splenic enlargement is to be referred to the disorder of hæmogenesis. Thus he holds with Heubner, Stoeltzner, etc., that rickets is not a general but a systemic disease, *i.e.*, of the skeleton.

The indications for prophylaxis and treatment are thus supplied—

the avoidance of over-feeding, and Monti, Baginsky and others are quoted in support of his opinion, that prevention or arrest of rickets can be secured by mere quantitative regulation of a suitable sterilised milk dietary. There are numerous references at foot.

G. R. Mill.

Williamson (R. T.). **Amyotrophic Lateral Sclerosis and Progressive Muscular Atrophy.** *Edin. Med. Journ.*, 1907, p. 394.

This paper is presented in the form of a clinical lecture, illustrated by the description of four interesting cases. In it the author argues that amyotrophic lateral sclerosis and progressive muscular atrophy, both of which are characterised by atrophy of the muscles, are two separate diseases, or at least distinct forms of the one affection, though by some neurologists they are described as the same disease. In both the pathological changes are limited to the motor neurons, of which the upper or central includes the cells of the motor cortex of the brain, and the fibres that spring from these to form the pyramidal tracts of the spinal cord which terminate in the ventral horns of the grey matter of the cord; and the lower motor neurons which consist of the nerve cells of the ventral horns and their axons which compose the neutral roots of the cord and the motor nerves to the muscles. In progressive muscular atrophy the disease is limited to the lower motor neurons, but in amyotrophic lateral sclerosis the upper motor neurons are, in addition, affected.

The chief difficulty in separating the diseases in diagnosis is due to the fact that often cases which at first present only the symptoms of progressive muscular atrophy may later become typical cases of amyotrophic lateral sclerosis; in other words, the degeneration of the lower motor neurons may precede any symptoms referable to affection of the upper neurons. The chief symptoms diagnostic of or in favour of the latter disease are a spastic condition of the lower extremities with increase of the tendon reflexes, and Babinski's sign, symptoms of bulbar paralysis, increase of the wrist-jerks paresis of muscles not yet definitely atrophied and a more rapidly progressive course of the disease.

Gordon Holmes.

Keeling (G. S.). **Epilepsy in Childhood; its relation to other diseases.** *Brit. Journ. Children's Dis.*, 1907, p. 133.

In the present thesis epilepsy was considered not in its entirety but as related to other diseases in the following aspects: pathological, etiological, familial and symptomatic. One hundred and fifty cases of epilepsy were studied. The conclusions of the writer are as follows:—

1. The pathology of epilepsy appears to resemble in some respects that of cerebral diplegia, chorea, paralysis agitans, neurasthenia, myoclonus and migraine.

2. Etiologically, rickets is an important factor in the causation of epilepsy.

3. A variety of epilepsy, which may be termed toxic epilepsy, is chiefly gastro-intestinal in origin.

4. Reflex epilepsy is apparently rare; peripheral irritation probably plays a very small part in the production of the fits.

5. The effect of measles on epilepsy is uncertain.

6. Chorea is very rarely found associated with epilepsy.

7. Infantile paralyses, especially the congenital forms, are closely related to epilepsy.

8. An injury or a fright is frequently the exciting cause of a fit. Instrumental delivery may be followed by paresis with subsequent epilepsy.

9. Enuresis is an occasional sequela of epilepsy.

10. The disease known as night terrors is probably a mild form of epilepsy.

11. The three affections most frequently found in the family history of epileptics are epilepsy, migraine, and alcoholism.

12. Migraine appears to be very closely allied to epilepsy, both in the family history and symptomatically.

13. The differential diagnosis between Méniere's disease and epilepsy is occasionally difficult.

E. M. Brockbank.

Coley (W. B.). **Hodgkin's Disease a type of sarcoma.** *New York Med. Journ.*, March 30, 1907.

Various theories are held with regard to the pathology of Hodgkin's disease. Numerous writers have attempted to maintain its tuberculous origin, but Dorothy Reed and others have controverted this theory, and it no longer has many supporters. Two other theories are possible, one, that Hodgkin's disease is a malignant growth; the other, that it is an infectious process. The author supports the former theory, being of opinion that the disease is a variety of sarcoma. He quotes cases showing that swelling of the cervical glands, resembling Hodgkin's disease in clinical characters, may be followed by enlargement of glands in the rest of the body, and yet repeated examinations by the most skilled pathologists will report the tumours to be round-celled sarcomata. Again, cases are quoted which illustrate the fact that tumours presenting clinically all the appearances of sarcomata are pronounced by pathologists to be cases of Hodgkin's disease. He believes that encapsulation of the tumours and absence of infiltration with the occurrence of a peculiar type of giant cells, points which are generally regarded as characteristic of Hodgkin's disease, may occur in certain types of sarcomata. The febrile condition and the marked tendency for primary involvement of the cervical region are in favour of an infectious origin, but since both occur in sarcomata the only inference to be drawn from them is that sarcomata generally are probably due to some infection.

The author believes that so-called Hodgkin's disease is but a variety of sarcoma, often sufficiently distinct to present a fairly characteristic clinical picture but at other times indistinguishable, either clinically or microscopically, from the more common varieties of sarcomata. He further holds, with Banti, that not only Hodgkin's but both the lymphatic and myelogenous types of leukæmia are really malignant neoplasms of the sarcomatous type. He suggests lymphosarcomatosis as the most appropriate term for so-called Hodgkin's disease.

E. N. Cunliffe.

Blumgart (L.) **Observations on the diagnostic and prognostic value of the Eosinophiles in the Circulating Blood.** *Med. Rec.*, April 6, 1907.

The eosinophilous cells are of proved value as a means of diagnosis in three groups of diseases, viz., certain diseases of the skin, the acute infectious diseases, and some of the animal parasitic affections, particularly those of the alimentary tract. The author gives details of a case where the diagnosis between typhoid fever and trichinosis was only made from a consideration of the fact that the eosinophilous cells formed 39·8 per cent. in a count of 15,300 leucocytes. This count at once negatived typhoid fever and indicated trichinosis. A second case is related where a leucocytic count of 5,300 leucocytes of which 25·0 per cent. were eosinophilous cells led to the rejection of a diagnosis of typhoid fever, and examination of the fæces showed the presence of Bilharzia hæmatobia.

Most authorities are now agreed that the eosinophilous cells are almost invariably decreased in typhoid fever, and Nägeli excludes the disease in any case where such diminution does not occur. The cause of the disappearance is the inhibitory action of the typhoid toxin on the bone-marrow. The author is of opinion that the less marked the diminution the milder the case, and that no typhoid fever patient should be considered cured or dismissed from observation before he has regained a normal percentage of eosinophiles.

E. N. Cunliffe.

Rous (F. P.). **Clinical studies of the Cerebro-spinal Fluid, with especial reference to pressure, protein-content, and the number and character of the cells.** *Amer. Journ. of Med. Sci.*, 1907.

Dr. Rous has devised a method which allows him to institute a fairly exact comparison between the cell-contents of different cerebro-spinal fluids; he mixes the cerebro-spinal fluid with a saturated solution of methyl violet, obtaining a mixture which contains 996 parts of the fluid in 1,000. He then counts the cells with the ordinary counting chamber. Another part of the fluid he centrifugalises, and makes films of the deposit for differential estimation of the leucocytes. The protein-

substances present he estimates by the addition of Esbach's picric acid solution. Pressure is estimated by means of an ordinary water manometer. By these methods he has examined and compared a considerable number of cases. The normal condition appeared to be that the number of cells present in a cubic millimetre of the blood was on the average 2·75; that these were all mononuclear cells; that the protein-content averaged $^1/_3$ gramme per litre, and that the average pressure was 210 mm., which is unusually high.

In tuberculous meningitis the average number of cells present per c.mm. was 213; the lymphocytic type of cell predominated, though polymorphonuclears were often present; the protein-content was always increased considerably; and the pressure was on the average 365 mm. The author points out that the value of these observations is not so much that they enable one to affirm the presence of tuberculous lesions, as that in a case where the normal figures are observed it is possible to affirm absolutely the absence of tuberculous meningitis. In purulent meningitis the three factors, pressure, protein-content and cell-content, are all notably increased, and in the last the polymorphonuclear type predominates. In the chronic cases, however, the fluid assumed characters which did not permit of differentiation from tuberculous meningitis. The other cases examined were somewhat heterogeneous, and the results cannot be briefly stated.

This account of the methods of examination of cerebro-spinal fluid obtained by lumbar puncture is valuable as a record of careful work, but it tends to confirm the opinion that the information to be derived is more limited than at one time seemed probable.

H. Thursfield.

Wood (A. J.) **Chorea in Children.** *Intercolonial Med. Journ. of Austral.*, February 20, 1907.

This paper contains an analysis of 223 cases of chorea treated in the Melbourne Children's Hospital. Two-thirds of the cases were girls. The average age was 9·7 years, and the youngest case was aged 4 years. A definite history of rheumatic fever was found in 18 per cent. The writer points out that both chorea and rheumatic fever show a great tendency to relapse. Both mitral stenosis and rheumatic nodules were very rarely seen. Twice as many cases occurred in the autumn and winter months as contrasted with the other half of the year, and in this chorea resembles rheumatic fever. The average duration of stay in hospital was seven and a half weeks. The writer has never seen a case of chorea from imitation, although isolation of chorea is the exception rather than the rule. There is no drug of any value in shortening the attacks, and for the acute maniacal cases chloral is the best drug. The treatment of chorea consists of absolute rest in bed, careful nursing and plenty of nourishment, while isolation may sometimes cure an intractable case.

C. P. Lapage.

KARASAWA (M.). **A case of acute Yellow Atrophy of the Liver in a Suckling Child.** *The Sei-i-Kwai Med. Journ.*, January 31, 1907. No. 299.

DR. KARASAWA records a case of acute yellow atrophy in an infant aged three months. The child suffered from vomiting and undigested stools, and the abdomen was found to be distended and tympanitic. As the disease progressed a moderate degree of jaundice developed and the stools became clay-coloured; also subcutaneous hæmorrhages appeared and increased in size till at the last they involved large areas of skin. Hæmatemesis occurred late on, the enlarged liver became palpable, and finally coma supervened, followed by death after 25 days in hospital. The post-mortem examination showed acute yellow atrophy of the liver. The case was peculiar in that, except for one slight rise in the temperature, there was no fever, the jaundice was only slight and came on late, whereas these cases are said to frequently follow attacks of catarrhal jaundice and to present more marked symptoms.

C. P. LAPAGE.

CUSHNY (A. R.) and EDMUNDS (C. W.). **Paroxysmal irregularity of the Heart and auricular fibrillation.** *Amer. Journ. Med. Sci.*, 1907.

THE writers describe a patient who suffers from attacks of paroxysmal arrhythmia, with marked acceleration of the rate of the heart. They show that the irregularity is due to an irregular discharge of impulses and not to defects in the contraction of the ventricle which appeared to respond to the impulses received. The examination of the heart by the usual clinical methods gave no clue to the cause of the irregularity. No enlargement of the cardiac dulness could be made out, there were no murmurs, and no objective signs of cardiac failure apart from the irregularity were present.

A similar form of irregularity in the dog's heart is described, and it is shown that this is due to the dog's ventricle receiving irregular stimuli from the auricle which is in the state of fibrillation. This form of arrhythmia is shown to occur in the dogs occasionally from peripheral irritation, and it is probable that this gives rise to reflex inhibition of the vagus centre which, acting on an abnormal heart, causes auricular fibrillation. The suggestion is made that in the patient described and in other cases of paroxysmal arrhythmia the condition is due to auricular fibrillation from inhibition of the vagus centre.

JOHN HAY.

BARIÉ (M. E.). **The Spleen in organic Heart Disease.** *La Presse Méd.*, March 6, 1907.

OBSERVATIONS were made in 216 cases, and it was found that in 23 cases the spleen was enlarged, and in four cases it was less than normal. There is a marked difference between the liver and spleen in the

frequency with which they become enlarged in cases of organic heart disease. In all the 23 cases noted the liver was found to be enlarged, and only in two cases did the spleen enlarge to a greater extent relatively than the liver, and both these cases were examples of ulcerative endocarditis. As regards infarcts, 13 cases out of 79 showed them.

From a clinical point of view, the cardiac spleen usually gives rise to no striking symptoms, but the author draws attention to the fact that in some cases epistaxis occurs to a most alarming extent, and becomes associated with pallor of the skin and mucous membranes and a rapid loss of strength.

E. N. Cunliffe.

Swan (J. M.) and Karsner (H. T.). **On the behaviour of the Eosinophile Leucocytes in cases of Pulmonary Tuberculosis.** *New York Med. Journ.*, March 23, 1907.

The authors examined thirty-one cases of pulmonary tuberculosis with the object of observing the behaviour of the eosinophile cells, with special reference to the prognostic value of these cells as found in the peripheral blood. They found that with two exceptions the eosinophile cells were below 1 per cent. in all fatal cases at periods varying from 102 days before death to the day of death itself, whereas in the cases which remained stationary or which were improving under treatment these cells, though subject to fluctuations, were present in fair number, usually over 1 per cent. They therefore conclude that the eosinophile cells show a tendency to decrease in numbers in unfavourable cases of pulmonary tuberculosis, and that this tendency is of some use as a prognostic sign. They believe that this fluctuation of the eosinophile cells is a measure of the severity of the secondary infection with pyogenic organisms, and that the reappearance of these cells in the circulating blood coincident with the improvement of a case of phthisis is probably due to the removal of the chemotactic influence of the products of the growth of pus organisms and the reassertion of the influence of tuberculin.

E. N. Cunliffe.

Fennell (C. H.). **Juvenile General Paralysis.** *Practitioner*, April, 1907.

This disease is defined as a progressive deterioration of mind and body, the outcome of stress acting on a nervous system tainted with congenital syphilis. A congenital imbecile may be affected, though rarely. There is always a history of parental syphilis, and although the patient may not always show signs of congenital syphilis, these signs may be present in the brothers or sisters. The onset may occur as early as at seven or eight years of age. The mental and physical characteristics are iridoplegia, slovenly speech progressively deteriorating, tremors, a peculiar worried or preoccupied facial expression, quite unlike that of an

imbecile, increase and later decrease of the knee-jerks and indefinite dementia. Delusions are rarer than in adults, and megalomania is rare. As the disease progresses the patient becomes weaker, till finally bedridden, the face is expressionless except for tremors and purposeless movements of the jaw and lip and epileptic seizures may occur. The post-mortem lesions are similar to those found in adults. Four illustrative cases are quoted out of the twenty or more collected by the writer.

C. P. Lapage.

Young (M.) **The diagnosis and treatment of infective throat conditions.** *The Practitioner*, 1907, p. 305.

Dr. Young gives the results of his experience in conditions of the throat, which either are, or appear to be, infective. He treats the conditions individually, and also gives two tables contrasting many of the different appearances under certain headings. The account of septic sore throat due to milk is taken largely from outbreaks at Paisley and Hackney, and reported on by the Medical Officers of Health of those districts, whilst under acute pneumococcal inflammation the description is taken from a case reported by Dr. H. Pasteur (*Lancet*, May 27th, 1905).

Under treatment Dr. Young says he has had excellent results with salophen in many throat affections, "particularly where rheumatism is an accompaniment." The drug is given in doses of ten to fifteen grains every three or four hours. He recommends that nasal or throat douching should be carried out by means of a siphon-douche, the "Higginson syringe" being an abomination, and the ball-syringe as bad. A large number of local remedies are mentioned, particular reference being made to formamint tablets in septic conditions, and to sublamin (1 in 1,500 or 2,000 alcoholic solution) where the discharge persists.

R. W. Marsden.

Gwyn (N. B.). **Orchitis in Typhoid Fever.** *Amer. Med.*, 1907. Vol. ii., No. 2.

Orchitis being an uncommon complication of typhoid fever, Dr. Gwyn reports two cases coming within his own experience. In the first a man, 40 years of age, underwent a severe attack of typhoid, and after about three weeks' illness complained of severe abdominal pain in the region of the appendix. The onset was sudden with exacerbation of temperature (1·5°), and was subsequently found to be associated with enlargement of the right testicle, especially the epididymis, but absolutely no excessive tenderness. The tumescence was apparently due to venous obstruction most likely high up in the spermatic vein, and subsided without after effects in the course of a few days.

In the second case the patient was convalescent from a very severe attack of typhoid fever, which had lasted 14 weeks, and been accom-

panied by cholecystitis. After a day's discomfort in the left testicle he was awakened from sleep by intense pain in this part, as well as in the cord, the groin and the region immediately above. The testicle rapidly swelled to the size of a goose egg, and was terribly tender and hard. Apparently the testicle was first attacked, the epididymis being felt as a smaller body. The temperature rose to 103°, and there was marked constitutional disturbance, with a leucocytosis of 18,000. In three days subsidence began, but suppuration followed by the end of a week. This case, he suggests, was a direct typhoid infection of the organ.

R. W. Marsden.

Effenheimer (A.). **Demonstration of the toxin in the blood of diphtheria patients.** *Münch. med. Woch.*, 1906, p. 1607.

Though formerly of opinion that Löffler's bacillus and the pseudo-diphtheria bacillus could be readily distinguished by the practised observer from their cultural and morphological characters, the writer now believes that no absolute difference in these respects between them can be recognised. Evidence of the absorption of poison being characteristic of an attack of diphtheria, he determined to try a new method by seeking the poison in the blood of the infected person. An examination of the literature showed that hitherto no attempt had been made to demonstrate such poison in the living body of a diphtheria patient, whilst experimentally the toxin is found to disappear quickly from the blood. In proving the presence of diphtheria antitoxin by a method introduced by Marx it was found that one-tenth of the minimal fatal dose for a guinea-pig did not fail to cause distinct œdema with hæmorrhages when injected into the subcutaneous tissue. Making use of this fact for the demonstration of small amounts of toxin, the writer injected a little of the blood of patients with diphtheria subcutaneously into those animals, but though positive results were obtained in 6 of 14 instances, he does not consider the method of value for diagnosis.

R. W. Marsden.

Holmes (L. E.). **Arthritis Deformans in Children.** *Amer. Med.*, April, 1907.

The paper is based on two cases of chronic polyarthritis occurring in children of the same family, in which extreme and widespread joint deformity was associated with marked trophic changes and severe eye complications leading to disorganisation and blindness of one eye. The cases did not run concurrently. They were not under the writer's care, and consequently the reports are incomplete. There was no clear family history of rheumatism or tubercle; other eight children were alive and healthy.

Case I. was taken ill when 11 years old with an attack in which all the joints were sore. Apparent recovery was followed by a relapse of the joint pains, which were especially severe at night. Swelling and stiffness lingered in one knee. At this time he developed a nervous disturbance resembling chorea, which lasted for some months. Recurring attacks of joint pain and swelling led gradually to complete crippling. Both large and small joints were extensively involved, including the spine, which showed lateral curvature, marked rigidity and tenderness. A peculiar swelling of the feet appeared, resembling elephantiasis, a severe dermatitis with exfoliation, sero-purulent discharge and superficial ulceration. This eventually cleared up after the toe-nails had been destroyed by onychia. About the same time the right eye was attacked with signs of severe inflammation, presumably iritis, leading on to progressive loss of vision, the other eye being unaffected. Anæmia, emaciation and muscular atrophy were marked, and the case terminated fatally after seven years' duration.

Case II. began to be affected when 8½ years of age; the onset was more gradual than in the former, and no remission occurred in the earlier stages. The patient was still alive. The joints and spine were affected similarly to Case i. No fever was ever noticed, but sweating was profuse throughout the illness. The left eye became affected similarly to Case i., and vision was gradually lost. Similar trophic changes appeared in the feet, though milder in degree than in the other. Muscular atrophy was extreme, the large joints flexed and practically immovable, and one hip was dislocated. Two photographs show well the great swelling of knees, ankles and elbows, accentuated by the extreme wasting of the limbs.

The two cases are remarkably similar. The trophic skin changes are of very unusual type, though similar ulceration and crust-formation was described by Hadden (*Clin. Soc. Trans.*, 1885). As regards the eye condition the history was not unlike that of tuberculous iritis, which, however, is a rare condition. Garrod and others have described similar eye complications, but some of these cases proved later to be of gonorrhœal origin.

The writer reviews the various theories advanced, and concludes that arthritis deformans as now understood includes a number of diverse conditions, for the differentiation of which we may look to further anatomical and bacteriological investigations. Some cases are probably of tuberculous origin, and the number of these may prove to be greater than supposed. With regard to the exact nature of the two cases reported he is unable to make a positive statement. In Case i. there was some suggestion of a rheumatic factor, *e.g.*, the occurrence of chorea, but the presence of osteophytes and of trophic disturbances pointed rather to a genuine arthritis deformans. Gonorrhœa and syphilis could be excluded and the probability of a tuberculous origin seemed remote.

G. R. Mill.

Bertier (J.). **Primary Thrombosis of the Cerebral Sinuses.**
Arch. Gén de Méd., 1907, p. 313.

This paper consists of a critical review of the literature on primary thrombosis of the cerebral sinuses, that is, of that form of thrombosis which is not due to extension of the disease from some neighbouring focus.

Etiology. It occurs relatively often in young children after acute infective or slow wasting illnesses, especially with gastro-intestinal disease and broncho-pneumonia. It is met with also in adults associated with marasmic and acute infective states, but the most frequent and important form is that which occurs in chlorosis.

Pathogenesis. According to the older theories the clotting was due to low blood pressure owing to feeble heart action, but now more importance is attached to the excessive coagulability of the blood in chlorotics, and to the existence of lesions of the endothelial lining of the sinus. The latter is the result of fatty degeneration of the cells after infective diseases or with anæmia. The relative frequency of sinus thrombosis is explained by the slowness of the flow of blood through them under normal conditions, by the fact that many veins open into the sinuses in the direction opposite to the flow of blood, and because from their position the blood stream within them must suffer very much when there is a general reduction of the arterial pressure.

Morbid anatomy. The unpaired sinuses, especially the superior longitudinal and the straight, are the most frequently thrombosed, and the clot generally spreads from them symmetrically to either side. The clot is never purulent, and as death generally occurs within a few days of its formation it is rarely found organised. There is never any periphlebitis or meningitis around the thrombosed sinus. The effect of the thrombosis is to produce stasis and capillary hæmorrhages in the cerebral tissue drained by the sinus. There may be complete destruction of tissue, and some blood generally escapes into the subarachnoid space or into the ventricles.

Symptomatology. The symptoms are due to cortical irritation and destruction, and they consequently vary with the site and the intensity of the lesion. As a rule prodromata, recognisable only in the adult, are succeeded by signs of irritation, and these are followed by paralytic symptoms. In children the first symptom is usually convulsions, general or unilateral, which become more and more frequent; in the intervals between them there is general rigidity of the trunk and limbs. In other cases the clonic convulsions are replaced by tonic tetanic attacks. There is almost invariably considerable pyrexia, vomiting and constipation, and in other children delirium and paralysis. Death generally results in a few days. Headache, malaise, apathy and photophobia are the most frequent prodromata in adults. After a variable period acute symptoms set in with cerebral vomiting, vertigo and constipation. The subsequent symptoms, which then develop rapidly, are very variable and inconstant. Epileptiform seizures are frequent; they may be general, unilateral or even more local.

Occasionally the attacks are of a more tonic nature, with trismus and opisthotonus. There is often cutaneous hyperæsthesia and exaggeration of the deep reflexes. Hemiplegia or monoplegia, incontinence of urine and fæces, blindness or delirium may develop, and the patient then generally passes into a state of coma with irregular pulse, Cheyne-Stokes respiration and raised temperature. In a few cases delirium has been the first sign of the thrombosis.

The *diagnosis* of sinus thrombosis is always difficult, and often can not be made. Bouchut has stated that a convulsion *at the end* of an acute infective illness or during the course of a chronic one in childhood always indicates thrombosis of one of the cerebral sinuses, but to this law there are many exceptions. Some indication of the condition may be obtained from the state of the veins of the head and neck. Emptiness of the jugular vein and the absence of any murmur when it is compressed, and painless swelling behind the ear point to obstruction of the lateral sinus; cyanosis of the face, localised areas of sweating in the face and neck, and congestion of the veins of the scalp and forehead, to occlusion of the superior longitudinal sinus, protrusion of the one eye and echemosis around it, congestion of the retinal veins, oculomotor palsies and œdema of one-half of the face point to thrombosis of the one cavernous sinus. Many cases, however, run a rapid course without any definite symptoms.

The prognosis is very bad; very few cases recover; death generally occurs within a week.

GORDON HOLMES.

PADOA (G.). **A contribution to the study of disease of the Cauda Equina.** *Arch. Gén. de Méd.*, 1907, 161.

PADOA discusses the difficulty in the diagnosis of lesions of the conus medullaris and cauda equina, and the differential diagnosis between lesions of these two regions in a voluminous paper, on the bases of three cases which he observed, but in none of which was the disease confirmed by autopsy. The paper adds little to the ordinary text-book descriptions.

The cauda equina includes all the spinal roots below the first lumbar, consequently all those which supply the muscles and skin of the lower extremities, the sphincters and the genitalia. All these roots can be affected together only by a lesion at the level of the second lumbar vertebra; the upper two lumbar roots, however, generally escape, and consequently sensation generally remains intact in the groins and on the front of the thighs.

The level of the lesion is indicated by the motor and sensory loss which results from the affection of the highest roots which are involved in it. The root supply of the muscles is now fairly accurately known, and the areas of skin supplied by the different roots is represented on the charts of Thorburn, Head and Kocker. The affection of sensation is generally relatively less than the motor palsy, probably due to the fact that each zone of skin has a pluri-radicular sensory supply.

The centre for the erector penis lies in the second, for ejaculation in the third, and for the sphincters in the fourth sacral segment, and consequently the state of these functions is an important guide in lesions of the lower roots or of the conus medullaris. The cremasteric reflex centre lies in the front, that of the knee-jerk in the second, third and fourth, and of the Achilles-jerk in the fifth lumbar segment. The loss of any of these reflexes indicates extension of the disease to the corresponding segment or the roots.

There is no certain sign of medullary as opposed to radicular lesions, but in the latter there is more intense and persistent pain, the symptoms are less symmetrical in the two limbs, the sensory loss has a less definite border, the muscles on electrical examination are found affected according to their root supply and fibrillation, a symptom of cord disease, is rarely, if ever, observed in the wasted muscles. Finally, in the case of tumours of the cauda equina blood or pieces of tissue may be withdrawn in the canula when a lumbar puncture is attempted.

In the differential diagnosis of disease in the lower end of the vertebral column peripheral neuritis, tabes dorsalis, sciatica and the progressive muscular atrophy of the Charcot-Marie-Tooth type must be excluded. Most important is the distinction from sciatica, which when bilateral should always excite suspicion of graver organic disease. True bilateral sciatica occurs rarely except in diabetics.

GORDON HOLMES.

BRAUN (J.). **The Traumatic Neuroses and the Compensation Act.** *Prager med. Woch*, 1907, p. 129.

IN 1894 an Act, apparently very similar to our Workman's Compensation Act which will shortly come into force, was extended to include all the employees of the Austrian railways. Braun's paper is based on tables compiled from official railway statistics for the ten years before and after this Act came into force. They include for each year the annual number of accidents, the average duration of incapacity for work per case, and reference to the sequelæ of the accidents.

The annual number of registered accidents has increased very much; this may be in part due to the enlarged staffs of the railways, but it is more especially to the fact that now each employee notifies the slightest injury, of many of which he would have previously taken no notice, in order to be able to attribute any organic or neurotic symptoms of which he may later suffer to it. There has also been a notable increase in the period of convalescence, especially from the slightest accidents. In the ten years prior to the Compensation Act neurasthenia or malingering supervened in only very rare cases on an accident, but during the decade after the Act came into force accidents followed by unfavourable results have steadily increased. The percentage of those who remain unfit for work has increased twenty-six-fold, and this increase is almost entirely due to neurotic cases. Similarly, in the second decade the sick leave per servant per annum was 2½ times as great as in the first, and this increase must be ascribed almost entirely

to the traumatic neuroses which practically, as far as the Austrian railway employees were concerned, sprang into being with the Compensation Act. In 1903 neurasthenia followed 14 per cent. of the slighter injuries. It has also been found that those engaged in strenuous work almost invariably use the slightest accident as an excuse for applying for less arduous employment.

According to Sachs and Freund not even the severest bodily injuries can directly produce the psychical disturbances we know as hysteria, but, on the other hand, psychical trauma, as shock, worry or fear may immediately produce a neurosis or the symptoms of hysteria, or a combination of both. Corporeal injuries can, at the most, produce symptoms of hysteria only indirectly, and then especially in cases of prolonged illnesses, defective nutrition of the nervous system, and other states associated with insomnia, care and worry or fear. This opinion is confirmed by experience; in the first decade accidents, even those affecting the central nervous system, were rarely followed by neurotic symptoms, and in the second decade neurotic symptoms have resulted from slight more frequently than from severe accidents.

On analysing the post-traumatic neuroses which occur nowadays no reason can be found to suggest that the factors described by Sachs and Freund as the immediate causes of the neuroses are now more active than they formerly were, in fact their influence has been if anything reduced; the duration of the illness by the greater efficiency of medicine and surgery, and the danger of ill-nutrition and the fear of impoverishment by the monetary compensation each patient receives while he is incapacitated from work.

The fact that neurotic symptoms follow slight relatively more frequently than severe accidents is due to the fact that in the latter case the person is already assured of compensation, while in the former he is aware that he must magnify or modify his complaints. Many cases may be purposely instructed in the symptoms they assume by other sufferers, and a further fruitful source of symptoms are the hospital clinics which they may attend and where they hear their symptoms or even their possible or probable symptoms discussed. The danger of suggestion of symptoms by any physician who examines or treats the case is emphasised. When the individual is a plaintiff in an action for compensation the accompanying psychical trouble, exaggerated by interviews with lawyers, must have a deleterious influence on the case; the whole concentrates the patient's thoughts on the subject of his illness and in this way a neurosis may easily develop.

The initial accident may have little or no relation to the symptoms, indeed a fictitious history often suffices for compensation; and even when a traumatic neurosis developes as a direct result of these influences it is difficult to see why a person should obtain compensation on the ground of an accident which had directly little to do with its occurrence. A considerable proportion of the cases which are generally regarded as traumatic neurosis could be quite justly classified as malingerers whose symptoms disappear when they receive compensation. What in medico-legal work is called a traumatic neurosis would be regarded in ordinary

life as a fraud. The award of compensation to such cases is only an incitement to similar claims by others. The immensity of the social danger which has resulted is illustrated by the fact that the insurance premium per head for railway employees is now in Austria five times as great as it was in 1898.

GORDON HOLMES.

STILL (G. F.). **A lecture on Enuresis and Fæcal Incontinence in Children.** *The Clin. Journ.*, April 24, 1907.

FREQUENTLY enuresis can hardly be said to have had an onset as the child never acquires that higher control of the reflex act of micturition which normally should come about the end of the first year of life. There may be an undue excitability of the lumbar centre or the control of the higher centres is weaker than usual. Some of the cases suggest a want of co-ordination such as occurs in stuttering. In other cases an abnormal amount of urine is the cause of the enuresis. Control during sleep is seldom acquired until two years, but the persistence of bed-wetting after the age of two and a half years in spite of careful training is to be regarded as abnormal. Boys and girls are equally subject to this subject, and the persistence of the infantile condition is as common as the acquired disorder, which rarely begins later than the ninth year. Enuresis during sleep is by far the commonest, and as it occurs during sleep in the daytime the concentration and acidity of the urine which occurs at night may not be so important in the causation as has been stated. Pollakruria or exaggerated frequency of micturition by day with a perfectly normal urine is frequently associated with enuresis and is a purely nervous condition. Thread-worms cause a local irritation, but also promote a nervous condition, which has a marked association with enuresis. Children with enuresis usually show evidences of nervous instability, being either timid or suffering from nervous headaches or night-terrors or walking in their sleep or showing habit-spasms. Obviously local causes play an important part, but usually too much stress is laid on such abnormalities; for instance, excessive acidity is often transient, and may be regarded as quite an exceptional cause, while cystitis may be the result and not the cause of the incontinence. The prognosis is good as most cases cease before puberty.

Treatment is of great value, and failure is too often due to half-hearted measures. After abnormalities in the urine and worms have been removed, belladonna should be given in large doses and continued for several weeks. Dr. Still gives very large doses; commencing with 10♏ of Tr. Belladonna three times a day for a boy of five, he increases it by 2½♏ every five or six days till tolerance is reached, but of course the child is kept under close observation. Many cases take 17½♏ three times a day without any toxic symptoms, or in exceptional instances a dose of 30♏ three times a day is reached. The possibility of an idiosyncrasy for the drug must be borne in mind. Tr. Lycopodium 12½♏ forms a valuable adjunct to the belladonna if the maximum dose of the

latter has been reached without controlling the enuresis. Tr. Nucis Vomicæ 5m for a child of 5 years is a useful adjunct to the mixture. Severe local measures, such as cautery, are to be deprecated, though the galvanic current may be of use. The removal of adenoids and circumcision are more measures for improving the general condition than directly curative. Dietetic measures and deficiencies in training or schooling must be remedied. Incontinence of fæces is rarer, occurs more by day and is associated with nervous instability. It is easily cured by doses of Dover's powder 1½ to 3 gr. three times a day, and a mixture of belladonna and potassium bromide to which arsenic and nux vomica may be added. The injection of drugs into the tissues about the rectum is quite unnecessary.

C. P. Lapage.

Gibb (T.). **Criminal aspect of Venereal Diseases in Children, based on personal examination of over 900 children, the alleged victims of Rape, etc.** *Med. Rec.*, April, 1907.

Dr. Gibb, who is Visiting Surgeon to the Penitentiary Hospital on Blackwell's Island, and Examining Physician to the New York Society for the Prevention of Cruelty to Children, calls attention to the prevalence in New York of sexual crimes against young children. Many such crimes can only be regarded as emanating from insane minds. In many cases between the ages of twelve and sixteen the child is the willing victim of the sexual act, and stress is laid on the great overcrowding in the lower class tenements in New York as largely conducing to sexual immorality. According to Dr. Gibb incest is not uncommon. Out of 900 cases examined, in 33 per cent. there was no evidence of violation, and we may therefore presume that about one-third of the charges were more or less unfounded. In 17 per cent. there was evidence of complete and recent penetration. In 50 per cent. there was evidence of complete but not recent penetration. Thirteen per cent. of the children examined suffered from some form of venereal disease, usually gonorrhœa or its complications. Syphilis was extremely rare, there having been only two or three cases out of 900 examined; but this may be explained by the fact that the children are usually examined before the disease has had time to develop. Dr. Gibb is of opinion that the cases examined form only a small proportion of such crimes actually occurring in the city; often the children themselves never complain, or the parents—if they know—keep their knowledge to themselves in their dread of publicity. In conclusion, Dr. Gibb shows that in New York there is a large amount of sexual depravity similar to that so well known to those whose duties cause them to frequent the criminal courts in our own country. Apparently the vulgar and disgusting belief that connection with a virgin is a cure for gonorrhœa prevails in New York as here.

Dr. Gibb's statistics all relate to the investigation of cases where the alleged victim was under sixteen years of age, the New York Society

for the Prevention of Cruelty to Children being organised for the protection of children under that age; but it appears that recently the age at which consent becomes a defence to a charge of rape has been raised from sixteen to eighteen years, and Dr. Gibb calls attention to the scarcity of the charges between sixteen and eighteen where the prosecution is in the hands of the city authorities, as compared with those under sixteen where the Society undertake the investigation and prosecution. But Dr. Gibb does not tell us in what proportion of the respective prosecutions a verdict of guilty is found.

W. Sellers.

Hayem (G.). **Sialophagy.** *Arch. des maladies de l'appareil digestif*, Paris, 1907, i, p. 20.

The author describes the various forms of aerophagy, in which the patients swallow greater or lesser amounts of air. Aerophagy is often a hysterical manifestation; but it frequently occurs quite apart from hysteria, and may be seen in almost any variety of gastritis. The object of the present paper is to divide up cases of aerophagy into two classes: (1) those in which the air is swallowed and is not brought back in crises of eructation; (2) aerophagy properly so-called, a spasmodic affection in which the air is swallowed into the stomach or œsophagus, and is noisily reproduced later..

The cases of class (1) are to be known as cases of sialophagy. This is because these patients are really suffering from ptyalism, and secrete an augmented quantity of saliva between meals; this saliva is constantly being swallowed—perhaps once a minute—and with it a quantity of air is swallowed also. Even during the night this secretion of saliva may continue; it is a reflex phenomenon, dependent in some way upon the processes of digestion, and excited by stimuli carried by the vagi. In a few cases this ptyalism is paroxysmal, a sudden gush of saliva from time to time filling the patients' mouths, so that they are forced to spit; this condition is properly called sialorrhœa.

Sialophagy, as above described, if at all marked, is likely to lead to flatulent dyspepsia, the source of the flatus being of course the air swallowed with the saliva. Mild cases are likely to cause no distress, and therefore pass unnoticed. Severe cases pass on into, or become complicated with, the spasmodic aerophagy described above, in which air is swallowed unmixed with saliva. It is probably often the case that a slight degree of spasm of the cardia exists in sialophagy, as the sounds heard on auscultation of the œsophagus in these cases are sometimes delayed. If the pylorus is abnormally relaxed, as it often is in obese ventripotent persons, the air thus swallowed may find its way into the intestine, giving rise to general tympanites.

A. J. Jex-Blake.

Bidenkap (J. H.). **Bacon-whitlow and Bacon-finger.** *Norsk Mag. for Laegevidenskaben*, 1907, p. 515.

Sailors in the Arctic Ocean are liable to a chronic sclerosing lymphangitis of the fingers associated with arthritis. The infection is analogous to that producing an acute whitlow, but the bacon-finger does not become reddened. It only occurs, practically, among sealers and walrus hunters, and is not rare among these; the infection is acquired in the process of quartering the seals, whether they be freshly killed or not, and in flensing them. One attack does not protect against another. The infection appears to enter the finger through recently healed or healing sores, and not through either open or old healed wounds. It begins as a cutaneous whitlow, and the nearest joint soon becomes affected—by a toxic arthritis. The infected finger acquires a phlegmonous aspect, and is held in extension, but is not reddened; neighbouring joints (hand, elbow, shoulder) are usually successively affected, perhaps within a week, though the process may be confined to the finger and hand. The tendon sheaths are not affected, nor are the lymphatic glands of the elbow or axilla involved. The skin of the finger becomes yellow-brown; the finger and hand swell up considerably, and if the patient does not rest the forearm may swell and come to measure half as much again as it did in circumference. A good deal of pain is felt in the round shiny finger, hand and arm, which soon become useless for work; the upper extremity is the only part of the body affected. Creaking and laxity may be felt about the affected joints; *restitutio ad integrum* of the infected finger is hardly ever seen, and fibrous thickening round the joints may be left, with limitation of active and passive movement. The swelling of the hand and arm seems to be due to ordinary œdema; red and inflamed subcutaneous lymphatics are not seen. In a few cases the process goes on to suppuration, no doubt in consequence of a mixed infection; the true bacon-finger is tender and elastic or almost fluctuating to the touch, but does not suppurate. If incised, the bacon-finger gives issue to a little watery blood, and the tissue tends to heal up readily. The new bacon-like tissue consists under the microscope of dense fibrous tissue with few vessels and a scanty infiltration of plasma-cells; the lymphatics are not obviously dilated.

As regards treatment, if the case is seen early and before a joint is affected, the finger should be incised and fomented. The author thinks that Bier's treatment by venous congestion should have good results here. He does not discuss the nature of the agent causing the infection.

A. J. Jex-Blake.

Hansteen (E. H.). **Spontaneous Rupture of the Aorta.** *Norsk Mag. for Laegevidenskaben*, 1907, p. 506.

After considering traumatic and spontaneous rupture of the diseased aorta, and quoting four cases in which rupture of the healthy aorta took place spontaneously, the author gives his own case. The patient, a

well-built apparently healthy workman of 23, took up his military service as a recruit. For a few days beforehand he went on the spree, and took a moderate excess of alcohol. On his first day of service he marched ten miles in four hours without any heavy load, and complained of feeling ill and having stabbing pains in the chest as he went. Two hours later he was examined and passed as fit for the line, and was set to pack his mattress with straw. While doing so he suddenly fell down dead. At the post-mortem the pericardium was found to contain 500 c.cm. of blood and clot, and the mediastinal connective-tissue was infiltrated with blood. The left ventricle of the heart was a little hypertrophied; there was a small calcified patch below one of the aortic valves, which were otherwise normal. One inch above the valves was a rectangular rupture in the posterior and right aortic wall; the horizontal limb, $1\frac{3}{4}$ inch long, opened into the connective-tissue between the aorta and the pulmonary artery. The tissues here were much infiltrated with older and more recent blood-clot; no perforation into the pericardium could be found. The vertical rent went downwards and was one inch in length; it perforated the intima, but not the media. The edges of these wounds were sharp, as though they had been cut with a knife. Microscopical examination of several pieces of the aorta taken from near the rupture showed nothing abnormal at all; no part of the aorta exhibited arterio-sclerosis, and no general rupture of the aortic elastic fibres could be discovered.

The most careful enquiry failed to reveal that the patient had recently met with any violence. The scars of similar (but non-perforating) ruptures have repeatedly been found accidentally in the aorta post-mortem. Hansteen is therefore inclined to think that the rupture in the present instance must have occurred a day or two before death. He quotes from Revenstorf's experiments on guinea-pigs (*Mitth. a. d. Grenzgeb. der Med. u. Chir.*, xvi., Hft. 4) to show that violent crushing or compression of the thorax is apt to cause rupture at this situation in the healthy aorta.

A. J. Jex-Blake.

Naumann (G.). **Case of Intestinal Stenosis due to chronic peritonitis round the sigmoid.** *Hygiea; Göteborgs Läkaresällskaps förh.*, December, 1906, p. 44.

The patient, a man of 56, had for years suffered from attacks of intestinal obstruction, for which he had been treated in hospital, with drum-like swelling of the abdomen, pain and vomiting. Laparotomy was finally performed on the left side. The sigmoid was found enormously distended; the meso-sigmoid was shrunken and small, and adhesions were present, binding together the mesentery to the large intestine and loops of the large intestine to each other, so that the whole was matted together. The patient was not in a good state, and it would have taken too long to unravel the mass. A lateral anastomosis was therefore made between the ascending colon and the

upper part of the rectum. No abdominal tumour and no further evidences of peritonitis could be found. The patient made a good recovery, and was much the better for the operation nine months later.

Naumann has seen other cases of sclerosing chronic peritonitis confined to the meso-sigmoid. Virchow described these partial peritonitides in 1853; Gersuny in 1889 drew attention to similar "pseudo-membranes" or adhesions occurring about the descending colon and the sigmoid flexures, and Riedel in 1894 described contractions of the meso-sigmoid similar to those met with in the case detailed above.

A. J. Jex-Blake.

Surgery.

GROSS (F.) and SENCERT (L.). **A contribution to the study and treatment of impassable non-malignant structures of the Œsophagus.** *Revue de Chirurg.*, January, 1907.

DIRECT examination with the œsophagoscope is essential in every case in which a simple cicatricial stricture of the œsophagus has failed to yield to careful and repeated attempts with bougies. In the majority of cases the use of this instrument will expose the face of the stricture to the surgeon's eye, and in this way will render the passage of a bougie a relatively easy matter. It is only in rare cases that an aperture cannot be seen in the strictured section of the œsophagus. This orifice is often dragged by the contraction into an eccentric position. Hence arises the chief obstacle to the bougie when passed in the usual fashion. With the œsophagoscope this difficulty vanishes and the stricture can be dilated up under direct inspection. There occur, however, some cases in which the stricture, by reason of its age and toughness, will not so readily dilate. These cases are best treated by the introduction of laminaria tents, which are left in place for twenty-four hours. Should the case still prove untractable the stricture may be divided either by electrolysis or by a cutting instrument. This division can be carried out fully and carefully under direct control of the surgeon's eye.

The œsophagoscope will show in some cases that these lines of treatment are unsafe owing to the extreme dilatation of the channel above the stricture or owing to the thinness and ulceration of the œsophageal walls. Cases such as these call for a different line of treatment. The œsophagus below the stricture is usually of smooth and normal appearance, and hence it is possible to carry out a retrograde dilatation of the constriction. This may be done by passing a sound upwards through a gastrostomy opening, but is likely to prove a very difficult manœuvre. Should this fail a large opening may be made in the stomach and the cardiac orifice fully exposed from below. The disadvantages of so large an incision with the obvious risk of peritoneal infection are serious drawbacks to this method. The authors suggest that in place of this last operation the œsophagoscope should be introduced into the stomach through a narrow opening which is sealed temporarily by a purse-string suture. It would then be possible to pass the instrument up the œsophagus and deal with the inferior face of the stricture under direct inspection. Where the above methods fail the case is doomed to a permanent gastric fistula unless one or other

of the major surgical interventions be attempted. Such methods are external œsophagotomy, partial œsophagectomy and œsophago-gastrostomy. Such methods have always been associated with a very high mortality, and cannot be regarded as indicated until the failure of all other less formidable measures.

E. D. Telford.

McCaskey (G. W.). **Rupture of the Colon from violent peristalsis, probably induced by fæcal impaction.** *American Medicine.*, February, 1907, p. 91.

The patient had presented during eight months symptoms such as pain, distension and visible peristalsis, which pointed to a stricture of the descending colon. A laparotomy performed on account of urgent symptoms failed entirely to disclose any obstruction. The colon was found to contain many rounded hard fæcal masses, and it was considered most likely that the violent peristalsis was excited by the mass of fæcal matter which it was unable to propel onwards. Under treatment by strychnine, purgatives and enemata the condition was much improved, when, consequent on the ingestion of a full meal, a violent attack of peristalsis occurred. Intense pain and collapse ensued, the patient dying in a few hours. The section showed at the splenic flexure a tear extending two or three inches in a longitudinal direction through which the contents of the gut had escaped into the peritoneal cavity. Dissection of the colon showed some slight narrowing below the rent. Inspection and palpation showed nothing in the nature of induration or ulceration to account for the giving way of the gut.

E. D. Telford.

Okinczyc (J.). **Clinical exploration of the Colon.** *La Presse Méd.*, February 9 and 16, 1907.

In spite of the fact that cancer of the large intestine is of a relatively benign type the results of operations performed for its relief have been so far very unfavourable. This is largely due to the fact that the disease is rarely diagnosed in an early stage and the vast majority of operations have been performed under the unfavourable circumstances attendant on the terminal condition of acute obstruction. As the early diagnosis of the disease is rendered more possible it will become more feasible to perform resections in one stage under favourable conditions with great reduction in the present high mortality.

The author discusses the various means at our disposal in arriving at the diagnosis of carcinoma of the colon in its early stages. Inspection may show the actual tumour, but is only likely to do so in advanced cases. This method is more likely to bring out the presence of meteorism and peristalsis, which are signs of much value. The results of palpation are very uncertain. It should be carried out with the gut as empty as possible, and should always be done in bimanual fashion.

Examination in a Trendelenburg position with one finger in the rectum and the other hand on the abdominal wall, will often yield valuable evidence. Owing to the anatomical and pathological variations in the colon, very little importance can be attached to the locale of any tumour discovered on palpation. Tumours will be found to vary in shape and size from time to time. Inflation of the colon with air pumped into the rectum will sometimes assist in defining the site and nature of an abdominal mass. Percussion may assist in the recognition of areas of limited meteorism, but is otherwise of little value. Proctoscopy supplies an easy and very exact method of examining the rectum and lower half of the sigmoid flexure. The tube of Strauss and Kelly may be used, and the author recommends the genu-pectoral position without anæsthesia and without inflation. It is possible to remove through the tube samples for examination of any abnormal condition which may have been encountered. The examination of the colon by bougies is dangerous and quite uncertain in its results. The method of large injections of bismuth mucilage per rectum in the genu-pectoral position with subsequent radiography has been well tried by the author, and appears capable of yielding valuable information. The article contains several specimens of photographs obtained in this way. In these pictures the outline and dilatations of the colon are exhibited in very distinct fashion. E. D. Telford.

Strauch (C.). **The technique of Narcosis.** *Zeit. für Chirurg.*, March 2, 1907.

The pre-operative mental condition of a patient exerts a marked influence on the manner in which a general anæsthetic is taken, and probably has much to do with the after history of the case. Strauch believes that the anxiety and sleeplessness of the night before operation are detrimental to the patient, and in particular the result is distinct weakening of the heart's action. He claims to obviate this condition by administering on the evening before operation a large dose (1 gramme) of veronal. Previous to the administration of the anæsthetic on the following morning an enema of alcohol together with a hypodermic injection of morphia are given. The anæsthetic used is ether unless definitely contra-indicated. By this procedure Strauch secures a complete narcosis, and claims that the heart's action is not damaged. After very lengthy operations the pulse shows comparatively small change. E. D. Telford.

Haim (E.). **Appendicitis.** *Zeit. für Chirurg.*, January, 1907.

From the statistics of cases operated on in the acute stage the author concludes that a severe type of appendicitis due to streptococcal infection occurs especially in the months of March, April, October and November, and is quite rare at other periods of the year. The milder forms of the disease, due to the colon bacillus, appear to arise uniformly

throughout the year. In Northern Europe the organism is usually colon bacillus or pneumococcus; in Germany, France and America colon bacillus and often streptococcus; in Italy and England the disease is due almost exclusively to the colon bacillus. It is for these reasons that the results of operative treatment show so marked a difference with different authors. If a knowledge of the bacteriological type of attack were available in all the cases much could be done to reconcile the apparent discrepancies in the statistical records of appendicitis. The streptococcal forms are especially common in younger patients, and in such cases the prognosis is much better than in later life where streptococcal infection, though rare, is always fatal. Haim suggests bacteriological examination in every case, and considers that real progress will be made by working on this line.

E. D. Telford.

Dawbarn (R. H. M.). **Sequestration Anæmia in brain and skull surgery.** *Annals of Surg.*, 1907. Vol. xlv., p. 161.

There can be doubt that every drop of healthy blood saved to the patient during an operation is worth while; moreover. the absence of obscuring hæmorrhage, of frequent interruptions for sponging, etc., such as are secured by the use of Esmarch's "bloodless method" in operations on the limbs, have proved invaluable aids to surgical technique. We cannot of course apply the ordinary "bloodless method" to controlling hæmorrhage from the brain, but, as the writer here points out, by accumulating blood in the limbs and then applying the elastic bandage, we can render the brain relatively anæmic, and so diminish hæmorrhage during intra-cranial operations. This is what he means by "sequestration anæmia." Its technique is as follows:—A towel folded lengthwise is wrapped about each thigh very close to the trunk, and upon this the rubber tube is tightened, the degree of tightness being such as to nearly stop the venous but not the arterial current. In from five to ten minutes the softened pulse indicates that the patient is ready for operation. The congested limbs are kept warmly wrapped, and hot water bags placed about them. Only in case the limbs grow excessively swollen or the pulse demands a change, is the tension altered during operation. It is usually sufficient to constrict the lower limbs at the groin. The return of blood must be permitted gradually. In order to avoid "reactionary hæmorrhage" in the operating field the writer advises the application for several seconds to the raw surface of gauze sponges wrung dry, with the rubber-gloved hand, out of *boiling* water. The advantages claimed by the writer for this method are therefore—(1) diminished blood loss; (2) lessened amount of anæsthetic required; (3) facility and hence shortened period of operation; all of which contribute to (4) decreased shock; further (5) should indications of shock appear one or both tourniquets can be released and the failing circulation augmented.

The writer frankly admits certain *contra-indications* to the method, viz., (1) atheroma and other diseases of the vessel walls; (2) certain blood conditions, *e.g.*, septic conditions, severe anæmia, etc., which would favour thrombosis, and even (3) cause risk of pulmonary embolism; (4) an excess of lime salts in the blood is also mentioned.

P. R. Cooper.

McDonald (E.). **Puerperal General Peritonitis.** *Annals of Surg.* 1907. Vol. xlv., p. 203.

This is a report of 11 cases. These are tabulated as follows:

No.	Local Lesion.	Character of Peritonitis.	Complications.	Organisms.
1	Acute hæmorrhagic endometritis.	Acute suppurative.	Acute suppurative endocarditis, septic pneumonia.	Staphylococcus aureus.
2	Abortion, acute suppurative endometritis.	Acute purulent.	Acute suppurative salpingitis.	Pneumococcus.
3	Premature labor.	Acute purulent.	Bilateral salpingitis.	Gonococcus, B. coli, streptococcus.
4	Abortion, gangrenous endometritis.	Acute purulent with petechial hæmorrhages.	Acute yellow atrophy of liver.	Streptococcus, B. capsulatus ærogenes.
5	Acute exudative endometritis.	Acute plastic.	Salpingitis, hydrosalpinx.	Streptococcus.
6	—	General plastic.	Pyosalpinx.	Streptococcus
7	Purulent endometritis.	Acute purulent.	—	Streptococcus, B. Coli.
8	Acute endometritis.	Acute purulent.	Abscess of cul-de-sac.	Streptococcus.
9	Acute purulent endometritis.	Fibro-purulent.	Pericarditis.	Streptococcus aureus.
10	Acute purulent endometritis.	Acute purulent.	—	Streptococcus.
11	—	Acute purulent, with multiple local collections.	Bilateral purulent salpingitis.	Gonococcus.

Discussing the *diagnosis* of these conditions, (1) the detection of micro-organisms in the lochia, although useful, is not proof of infection, as these have been shown to occur in 30 to 50 per cent. of normal puerperia; (2) the extension of infection to the peritoneum in a woman who is already infected may show few additional symptoms, and, on the other hand, acute abdominal symptoms may be due to lymphangitis alone; (3) the time at which extension of infection to the peritoneum occurs is very variable—in streptococcic infection it is seldom earlier but often later than the third day; (4) *pain* is usually prominent, it is colicky in character and aggravated by peristalsis; (5) *rigidity* is usually an early and trustworthy sign, being most marked in cases with sudden onset; later it is overcome by (6) *distension*; (7) *tenderness* is not usually marked, except where there is considerable attempt at repair, *e.g.*, thick exudate and adhesions; (8) *vomiting* is fairly constant, at the

onset it is regurgitative, later more persistent biliary fæcal and even hæmorrhagic; (9) the *temperature* is very variable; in the more virulent infections it is at first very high and intermittent, later persistently high; in the less virulent infections, *e.g.*, gonococcal and pneumococcal, it does not usually rise above 103°F.; (10) the *pulse* is usually, however, a better indication of the patient's condition than the temperature; (11) the *blood changes* are interesting,—there is a marked reduction of red corpuscles, and an increase of leucocytes, especially of the polymorphonuclears; a sudden and marked fall in the leucocyte count, however, points to an overwhelming of the system by the infective toxins; *iodophilia* is another useful sign, it varies with the extent of the toxæmia, in some cases a bacteriological examination of the blood gives positive information; (12) careful physical examination should be made not only locally but for detection of complications, *e.g.*, in heart, lungs, joints, etc.; cyclitis, pyelitis and pyonephrosis should not be overlooked; (13) paracentesis of the abdominal cavity should be used with great care, if at all.

The *prognosis* is generally bad unless operation can be done. The expectant method gives almost invariably fatal results; cases treated surgically show nearly 50 per cent. of recoveries, and the tendency is towards better results.

As regards *treatment*, all cases should be operated upon as soon as diagnosed. Laparotomy, with evacuation of purulent matter, drainage, and if possible removal of the focus of infection, should be the procedure adopted, care being taken to cause as little traumatism as possible in achieving this. Lavage should be avoided. Where the intestinal walls are paralysed enterostomy will be required. Where there is venous thrombosis ligature may be performed. Besides operation, the use of polyvalent antitoxins may be tried, *e.g.*, especially anti-streptococcic serum. The injection of nucleic acid (Mickulicz) is also useful.

P. R. Cooper.

Moynihan (B. G. A.) **Subacute Perforation of the Stomach and Duodenum.** *Annals of Surg.*, 1907. Vol. xlv., p. 223.

This condition differs from *acute* perforation chiefly in the fact that the escape of fluids, etc., from the perforated viscus is fairly localised, and the peritoneal response is circumscribed. The conditions which favour this limitation are—(1) an empty condition of the stomach; (2) plugging of the opening in the ulcer with a tag of omentum; (3) sealing of the opening with layers of plastic lymph,—a protective barrier forming in front of the advancing ulceration; (4) adhesion of base of ulcer to anterior abdominal wall or adjacent organs.

The *symptoms* differ only in *intensity* from those of acute perforation, *i.e.*, sudden onset of intense epigastric pain following usually upon symptoms of gastric ulceration of some duration. There is frequently vomiting and prostration, rarely collapse. On *examination* the abdomen is everywhere tender, but careful palpation usually reveals a specially tender and resistant area, *e.g.*, 2 to 3 in. in diameter.

Course, the symptoms abate slowly. If no operation is performed (1) the base of the ulcer may become firmly adherent to the abdominal wall or adjacent viscera and the acute inflammatory conditions subside; (2) a perigastric abscess may form, or (3) a secondary rupture into the general peritoneal cavity may occur.

Differential diagnosis—from (1) *cholecystitis* the previous history may afford a clue; (2) *subacute pancreatitis* may be difficult to distinguish by clinical signs alone; (3) the possibility of perforation of a *malignant growth of the colon* should be borne in mind.

Treatment. If the patient is seen at the time of onset of perforation *instant operation* should be performed. In cases where the pyloric region is involved the writer favours the practice initiated by Lund, viz., avoiding interference with nature's limiting adhesions and putting the ulcer in the most favourable position for healing by establishing a gastro-enterostomy. In other cases, for example, where the ulcer is on the anterior wall and a wide area is covered with lymph he prefers to expose and suture the perforation with or without performing gastro-enterostomy. Notes of fifteen cases are appended.

P. R. Cooper.

Sprengel. **The operative treatment of Femoral Hernia.** *Arch. für klin. Chirurg.*, Bd. 81, heft 1, p. 244.

The author alludes to the various operative methods hitherto recommended, which he classifies as follows:—

1. Ligature and extirpation of the sac.

2. Suture methods with the object of closing the defect by fibrous tissue:

(*a*) Without special regard to the femoral canal—(1) simple suture of Poupart's ligament to Cooper's ligament or the pectinæal fascia; (2) by purse-string suture.

(*b*) With special regard to the femoral canal—(1) no special treatment, beyond ligature, of the sac (α) with button suture, (β) with purse-string suture; (2) with special suture of the sac stump—(α) no fresh incision, (β) abdominal incision in order to free the peritoneum.

(*c*) Methods to obtain direct approximation of Poupart's ligament with the os pubis.

(*d*) With partial or complete division of Poupart's ligament.

3. Plastic methods to effect a muscular closure of the defect.

4. Plastic methods by flaps, either fibro-muscular, muscular, fibro-periosteal, periosteal or bony.

5. Hetero-plastic methods.

Sprengel's new method is as follows:—The femoral sac is thoroughly freed by an incision over the canal, the sac opened, the contents dealt with and the wound temporarily plugged. A straight incision is then made through the rectus muscle of the same side, the abdominal viscera retracted and a closed pair of Mikulicz's forceps introduced down the

femoral canal, by means of which the apex of the sac is seized and inverted into the abdomen. The puckered sac is now sutured over the internal femoral ring so as to completely block that orifice, and here the round ligament may be used, incorporated with the sac to further strengthen the occlusion. The abdominal and the femoral incisions are then closed in the usual fashion, the latter without any further treatment of the femoral canal.

LAWRENCE JONES.

MIGNON (A.). **The application of the different methods of Amputations of the Limbs.** *Gaz. des Hôpitaux*, March, 1907, p. 735.

THIS is a short article based on the author's personal experience of amputations. He strongly condemns the circular method, and disapproves of the increasing tendency towards its use. It is not an economical operation, and the stump is ungainly, with a median and often adherent scar; for this method he would always substitute the mixed method of Sedillot. In the majority of amputations performed for injuries it is possible to obtain a long flap from one aspect of the limb, and therefore the use of any set operation is to be discouraged.

LAWRENCE JONES.

PAINTER (C. F.). **Subdeltoid Bursitis.** *Bost. Med. and Surg. Journ.* Vol. clvi., No. 12, p. 345.

THE condition is not a rare one. The commonest causes are traumatism, either sudden or continuous, and due to the subject's occupation. Much more rarely has the disease an infective origin. According to Codman the mobility of the bursa is helped by its close relation to the tendon of the supraspinatus, and rupture of this tendon predisposes to bursitis. Sometimes when the bursa contains old cheesy material it gives a definite shadow in an x-ray photograph. The earliest symptoms are pain and stiffness of the shoulder, limitation being most marked in movements of abduction and rotation; forward and backward movements are much less curtailed. There is much pain at night owing to the discomfort of the supine position. Swelling is not a marked feature, but there is always very acute local tenderness with much wasting of the shoulder muscles.

Excluding the more acute cases, treatment should be first by manipulations and massage; but if these fail operation is indicated, and the entire sac should be dissected out. A straight incision over the shoulder and separation of the deltoid fibres gives a good exposure of the bursa. Passive motion should be started at once. Movement is generally perfect in two or three months.

The author gives an account of four successful cases.

LAWRENCE JONES.

Proust (M. R.). **Schuchardt-Schauta method of Perinæal Colpo-Hysterectomy.** *La Presse Méd.*, March 16, 1907, p. 169.

The author alludes to the excellent results obtained by the originators of this method in spite of the severity of the operation. Thus out of 58 operations Schuchardt has had seven fatal results; and of 25 patients operated on more than five years ago ten are still alive. The operation is divided into several stages; the first consists in making an incision around the orifice of the vagina and freeing about 5 centimetres of the canal and then sewing up the lower end of the canal securely and leaving some of the sutures long in order to pull on the parts. An incision is then made from the junction of the posterior and left quadrants of the circular incision, dividing the vulva and prolonged backwards laterally and parallel to the perinæum, often extending as far back as the anus; the rectum is carefully guarded and retracted towards the right. Then the bladder is dissected from the anterior vaginal wall and the ureters, which are recognised by their reddish colour, are freed well into the cellular tissue. Then the vagina is freed posteriorly and laterally as high as Douglas's pouch and the connective tissue of the pelvis included in the dissection. The peritoneum is opened, first in front and then in Douglas's pouch and the fundus of the uterus brought out through the anterior opening; the structures in the broad ligament are gradually divided and ligated, and after removing the uterus, tubes, vagina and parametric tissue in one piece, the rent in the peritoneum is closed and a drain of gauze inserted and the skin incision closed. The commonest accident is wounding the bladder or ureters; in 218 operations Schauta saw the bladder injured eight times and the ureter nine times.

Lawrence Jones.

Watts (S. H.). **The suture of Blood Vessels, etc.,** *Bull. Johns Hopkins Hospital.* Vol. xviii., p. 154.

The article is a historical and experimental study of this important subject.

Hallowell, in 1759, was the first to close a wound of an artery by suture twisted round a transfixing pin.

In 1881 Gluck attempted suture of longitudinal wounds of the femoral artery in dogs, but without success as leakage occurred.

Jassinowsky, in 1889, experimented with larger blood-vessels, and met with success in 22 cases out of 26.

In 1894 Heidenhain found that in suture of the carotid and femoral arteries in dogs hæmostasis was perfect, but the vessels were occluded.

Silberberg, in 1898, laid down that for success it is necessary that the sutures do not appear in the lumen of the vessel, that the vessel should be a large one, and that the wound should be clean cut and longitudinal or oblique, or if transverse should not exceed one-third of the circumference of the vessel; suture of the sheath as an additional precaution is advisable.

Up to 1903 Hopfner was able to collect 30 instances of suture of a main artery in man.

Circular suture of a divided artery was first attempted by Abbe in 1894, being performed over a thin glass bobbin.

Brian and Jaboulay made ten experiments in simple circular suturing in 1896, only being successful in the case of one large artery.

In 1897 Murphy attempted suture by invagination with decided improvement in his results.

Payr, in 1900, devised a method of suture, making use of an externally placed prothesis of magnesium which is an absorbable substance.

In 1902 Salinari and Virdia used Murphy's method in sixteen experiments; infection occurred six times, thrombosis six times, narrowing twice and good union twice. Payr's method was used three times without success.

The author in a similar way deals with the historical aspect of arterio venous anastomosis, which has been used by Crile and Dolley to transfuse blood from an artery into a vein directly; for this last purpose he has operated on four patients, uniting the radial artery to the median basilic vein; the operation was successful in every case, although in two patients the new blood failed to save life. He also considers the question of transplantation of arteries and veins and transplantation of entire organs and limbs by anastomosis of the main vessels. He has himself performed numerous experiments on animals, using Carrel's method of simple suture, which he strongly supports instead of Murphy's and Payr's methods. The experiments on the large vessels of the neck, which include end-to-end union, arterio venous anastomosis, lateral anastomosis, transplantation, and partial occlusion, were nearly all successful. Transplantation of the thyroid, performed six times, was in no case successful. It is necessary to be very careful in technique, and above everything to obtain strict asepsis. He uses small spring clamps to secure temporary hæmostasis, and very small round needles armed with fine greased silk to perform the suturing; the coats of the vessel must not be injured by rough handling nor allowed to get dry during the operation. There are numerous illustrations of specimens.

LAWRENCE JONES.

KEYES (E. L.). **Tuberculosis of the Testicle.** *Amer. Journ. of Urology.* Vol. iii., No. 4, p. 131.

THIS is a paper based on observation of 100 cases.The disease was first noticed in 65 per cent. between the ages of 20 and 40. In no case has there been satisfactory proof that the testis was the only focus of the disease; in cases of doubt the author suspects that at any rate the prostate was involved. It is very striking that only one patient begot children after the discovery of the disease. In eleven cases

gonorrhœa, either acute or chronic, was present at the onset of testicular disease. The globus minor was most often the part first affected, contrary to the usual teaching on this point. The initial symptoms were quite as acute as those of gonorrhœal epididymitis in 34 cases, and in one they were so severe as to simulate strangulation. Recurrence in the opposite testis was the rule rather than the exception, and practically all recurrences occurred within four years.

The prognosis as regards life is apparently fairly good, but actual cures by operation are not the rule. The diagnosis of this disease, from simple inflammation, syphilis and neoplasms is fully considered, and stress is laid on the value of examination of hydrocele fluid, of pus from abscesses and of any urethral discharge for tubercle bacilli. He is strongly in favour of the hygienic treatment of this disease, in fact it should be treated as tuberculosis of the lungs. Removal of the organ while the disease is causing abscesses and fistula is not to be recommended; incision and scraping combined with fresh air, etc., will give much better results, unless of course the testis is riddled with abscesses. The operation of epididymectomy has proved much more satisfactory than castration, even when the body of the testis is moderately involved, for the latter usually heals by itself under palliative treatment.

LAWRENCE JONES.

MITCHELL (A.). **Tuberculosis of the Urethra, Seminal Vesicles, Prostate and Bladder.** *Amer. Journ. of Urology.* Vol. iii., p. 150.

THERE are two predisposing factors of importance—gonorrhœa and sexual activity. Tuberculosis of the urethra, at any rate of the anterior portion, must be a disease of great rarity. Diagnosis should be made by the endoscope and the detection of tubercle bacilli in an apparently causeless urethral discharge. The posterior urethra is commonly involved secondarily to other organs, particularly to the prostate. Burckhardt has found the prostate involved in 73 per cent. of cases of genito-urinary tuberculosis. The lesion which gives the gravest prognosis is tuberculosis of the bladder. Primary tuberculosis of the seminal vesicles is probably common, but is rarely recognised until it becomes part of a general genito-urinary disease. The majority of surgeons are agreed that primary tuberculosis of the bladder hardly ever, if ever, occurs, being usually secondary to the kidney or genital organs. He emphasises the need of repeated examinations of the urine for tubercle bacilli in order to obtain an early diagnosis, and recalls the observation of Casper that sterile urine from a patient with symptoms of cystitis is suggestive of tubercle. He summarises the methods of treatment at present in vogue for these affections, but does not give his own personal predilections.

LAWRENCE JONES.

VON ANGERER (O.). **Nephrectomy for unilateral chronic interstitial and hæmorrhagic Nephritis.** *Arch. für klin. Chirurg.* Bd. 81, Theil ii., p. 1.

VERY different opinions are expressed as to the frequency of unilateral nephritis. Trauma seems to be a noteworthy cause. The following case serves as an example:—

An officer in the war of 1870 broke a rib and damaged the kidney; at the time there were no symptoms of special severity, but in 1878 pain was noticed, and in 1900 there began, for no obvious reason, severe colic on the same side and hæmaturia. In the urine there were blood, albumin and casts. The left kidney, examined by the cystoscope, was sound. The right kidney was removed. On section the cortical portion was reduced, blood-red in colour and abnormally firm; the calyces and pelvis were enlarged. A cure resulted.

In arriving at a diagnosis the use of the cystoscope and the ureteric catheter is of prime importance. The author points out that such a disease is hardly recognised, and quotes Rayner's case of a man, 23 years old, with severe hæmaturia, shown to be due, after death, to a unilateral nephritis. The author gives a further example which he has observed:

A man, aged 52, fell backwards and sustained a severe contusion in the region of the right kidney. There was much pain for about four weeks, but no hæmaturia. Two years later he began to notice loss of appetite, pain in the abdomen and headache, followed by jaundice of three weeks' duration. From this he recovered, but in August, 1904, 2½ years after the accident, there was a return of the symptoms, and a swelling was found below the liver which was taken to be either a mobile kidney or the gall-bladder. In January, 1906, he again damaged the renal region, and his symptoms increased, and soon after hæmaturia was observed for the first time. When he was examined there was a tumour in the right renal region; the urine contained nothing abnormal beyond some uric acid crystals, leucocytes and epithelial cells. Cystoscopy revealed a deposit of blood near the right ureter. Ureteric catheterisation failed owing to prostatic hypertrophy. The urine was separated, and that from the right kidney showed red blood cells and leucocytes in excess of that from the left. Soon after this profuse hæmaturia began and was shown by the cystoscope to be coming from the right ureter. Accordingly the right renal region was explored and the kidney found to be four times the normal size; its surface was quite firm and smooth. Nephrectomy was performed. On section no stone or growth was found, and by microscopical examination the kidney was seen to be in a condition of interstitial hæmorrhagic nephritis. Convalescence was uneventful, and six months after the operation the man had regained his weight, and the urine was free from abnormalities.

LAWRENCE JONES.

KLAP. **The treatment of surgical Tuberculosis by the method of Cupping.** *Arch. für klin. Chirurg.* Bd. 80, heft 1, p. 42.

THE value of this method is most marked when employed for fistulæ or the breaking down varieties of tubercle. In the case of fistulæ the cupping glass is directly applied to the diseased area, but with abscesses an incision is first made and then the contents withdrawn by suction. Quervain and Garré objected to the method on the assumption that a secondary infection would be likely to occur, but this is not found to be so in actual practice. The author is not in favour of using a sharp spoon as he considers the granulations play an important rôle in the healing of the abscess and their removal is only likely to infect fresh tissues previously healthy. He has shown that the discharge caused by the cupping from fistulæ and chronic abscesses is only slightly infective, indeed in experiments on guinea-pigs infection was by no means the rule. In the case of fistulæ it is very important to improve the condition of the skin around the opening by appropriate remedies. He does not limit this method to abscesses, but has employed it with success in the treatment of tuberculous joints.

LAWRENCE JONES.

Pathology.

Picchi (L.). **A contribution to the knowledge of the Bacillus of Gaseous Gangrene of Fraenkel.** *Lo Sperimentale.* Anno lxi., fasc. i.-ii.

Dr. Picchi's experiments with cultures of Fraenkel's bacillus incline him to believe that the bacillus is extremely pathogenic both to man and animals, and that it can produce its definite effects without the aid of other organisms. In addition to other actions it is able to produce gas in the tissues of living animals. The organism acts differently in living and in dead animals, and in the latter it does not produce the distinctive spumous state which is so characteristic of its action on living tissues.

Arthur Robinson.

Cimoroni (A.). **Upon hypertrophy of the Hypophysis in animals deprived of the Thyroids.** *Lo Sperimentale.* Anno lxi., fasc. i.-ii.

There has been some doubt with regard to the exact effect of the removal of the thyroid and the accessory parathyroids on the pituitary body. For the purpose of resolving this doubt Dr. Cimoroni made a series of experiments upon dogs, and by those experiments was led to the following conclusions:—The hypertrophy of the pituitary body which follows thyroidectomy is due to the removal of the thyroid itself and not to the removal of the parathyroids. The histological characters of the hypertrophied organ are distinct, and an outstanding feature is the presence of cells of large size by means of which this special hypertrophy is differentiated from that which follows castration. Dr. Cimoroni believes further that the formation of the special elements indicates an augmented functional activity of a series of special cells which cannot be differentiated under ordinary conditions nor after castration.

Arthur Robinson.

Solaro (G.). **A contribution to the study of the implantation of Fœtal Tissues.** *Lo Sperimentale.* Anno lxi., fasc. i.-ii.

Dr. Solaro finds that portions of the fœtal tissues of the white rat when implanted in the liver or subcutaneous tissue of animals of the same species are capable not only of becoming attached but also of increasing in volume and undergoing a process of progressive development. The persistence is longer and development more complete of the fragments which are implanted in the subcutaneous tissues as con-

trasted with those implanted in the liver. In all cases the implanted fragment becomes surrounded by the vascularised capsule, but the vascularity of the tissue of the host bears no relation to the attachment and evolution of the implanted tissue. Implanted fœtal cartilage may develop into bone possessing medullary spaces and normal medulla, but in all cases the implanted tissue eventually disappears.

ARTHUR ROBINSON.

RONDONI (P.). **Nephrocapsectomy or Ecapsulation of the Kidney.** *Lo Sperimentale.* Annò lxi., fasc. i.-ii.

IT has been suggested that incision or removal of the capsule of the kidney might be a useful operation in some forms of nephritis associated with over-distension of the kidney and consequent interference with its circulation, and that the development of a secondary capsule, from the surrounding connective tissue, would be associated with the formation of a series of anastomosing vessels which might be useful as a means of collateral circulation in certain chronic forms of renal disease. Dr. Rondoni's experimental researches do not serve to support these contentions for they lead him to the following conclusions: (1) That after removal of the original capsule a new capsule is usually formed, partly by the proliferation of the surrounding connective tissue and partly interstitial tissue of the kidney and the remains of its original capsule. (2) That when remnants of the original capsule were left no vascular connection was established between the renal and the surrounding perirenal tissues, but if the whole of the capsule was removed with greater or less injury to the kidney substance there was invasion by the proliferating tissues around followed by a sclerosis which produced definite damage of the functional elements of the kidney. (3) That the function of the kidney is immediately adversely affected by the operation, and at a later period no definite advantages are secured. (4) That the ecapsulated kidney is as sensitive as its unoperated upon companion to the actions of poisons. (5) That chronic interstitial nephritis is aggravated by the operation.

ARTHUR ROBINSON.

BIFFI (U.) and RAZZETO (O.). **Upon the application of Filtration in Microbiology, and on the permeability of certain Filters to the Protozoa met with in Water.** *Lo Sperimentale.* Anno lxi., fasc. i.-ii.

BY means of a series of observations Drs. Biffi and Razzeto found that certain well-known filters were permeable to protozoa of varying sizes after a longer or shorter period of time. The porcelain candle filters of Kitasato marked A_3 and the Pakal filter were traversed by amœbæ of 20μ in from 8 to 21 days. The Camberland filter B and the "incomparable D" were traversed by flagellati of $6—15\mu$ and by amœba of $10—20\mu$ in from 10 to 55 days. The candle filter of Chamberland F

were traversed by flagellati of from 6—15μ and by amœbæ of from 10—30μ in from 4—60 days. Reichel filters were traversed by similar amœbæ to those which passed through the Chamberland F in from 8—22 days. The small Berkfeld filter was traversed by ciliati of from 30—40μ by flagellati of from 6—20μ and by amœbæ of from 10—30μ in a time which varied from one hour to 30 days, and the compressed cellulose filters of Gradjear were permeable to similar organisms which passed through from the end of the first minute after filtration commenced. The application of these facts for practical purposes is obvious.

ARTHUR ROBINSON.

JAMIESON (J. K.) and DOBSON (J. F.). **The lymphatic system of the Stomach.** *The Lancet*, April 20, 1907.

IN the course of this communication the authors point out the importance, from a clinical point of view, of a thorough knowledge of the situations of the glands into which the lymphatic vessels from an area which may be operated upon open, and it is obvious that a radical operation, in a case of malignant disease, must include at the least the removal of all the glands which may be directly infected from any given area. In their research upon the lymphatic vessels and glands of the stomach they made use of Gerota's method of injection, and apparently met with many of the difficulties which have to be faced by those who utilise that excellent but troublesome process. As the result of their researches they divide the glands associated with the stomach in the following way:—

1. Primary, that is, glands which only receive lymph directly from the stomach. There are (*a*) lower coronary, (*b*) para-cardial, (*c*) supra-pyloric, (*d*) right gastro-epiploic, (*e*) splenic.

2. Partly secondary. These glands may receive lymph either from the preceding glands or directly from the stomach; (*a*) upper coronary, (*b*) sub-pyloric, (*c*) right and left supra-pancreatic.

3. Purely secondary; (*a*) middle supra-pancreatic, (*b*) mesenteric, (*c*) lumbar.

The position of the glands are indicated by the names chosen for them, and it appears that a radical operation for a malignant growth of the pyloric part of the stomach should include the removal of all the glands of the primary and partly secondary groups. Further, it is always to be remembered that the efferents of the first two groups of glands may have carried the infection to the third group. The authors do not accept the opinion that there are distinct lymphatic areas in the walls of the stomach; on the contrary, they are convinced that all the lymphatics can be injected from the submucous plexus, and they believe that although the lymph from a given area usually flows in one direction, it may under other circumstances flow in different channels and so reach other than the usual glands.

ARTHUR ROBINSON.

Jamieson (J. K.) and Dobson (J. F.). **The lymphatic system of the Caecum and Appendix.** *The Lancet*, April 27, 1907.

As a result of observations made on 13 specimens with Gerota's method the authors arrange the lymphatic glands associated with the cæcum, the appendix, and the ascending colon in the following groups:—(1) Appendicular; this group includes only one gland which lies in the meso-appendix. (2) Ileal, in the lower part of the mesentery. (3) Anterior ileo-colic. (4) Posterior ileo-colic. (5) Right colic. (6) The glands of the ileo-colic chain which lie along the ileo-colic artery. The latter group is subdivided into a lower and upper series. From the appendix efferent vessels pass to the appendicular gland, to the posterior ileo-colic glands and to the upper and lower groups of the main ileo-colic chain. From the cæcum efferent vessels pass to the glands in which the appendicular lymphatics terminate and also to the anterior ileo-colic glands. From the lower part of the ileum efferent vessels issue which end in the anterior and posterior ileo-colic groups of glands and in the lower glands of the main ileo-colic chain, and from the ascending colon lymphatics pass to the right colic glands, to both groups of the main chain and to the posterior ileo-colic glands. Even a superficial survey of the connections above mentioned will indicate the wide scope of a radical operation which is devised to cope with a malignant growth implicating the cæcum and colon. Such an operation necessarily includes the removal of the parts affected with the growth and the clearing away of all the glands lying to the right of the root of the mesentery. The authors' observations lead them to disbelieve in the connection between the lymphatics of the vermiform appendix and those of the right ovary upon which considerable stress has at times been laid.

Arthur Robinson.

Lindahl (C.). **The bactericidal action of Tears.** *Hygiea*, 1907, p. 353.

The normal secretion of the lacrimal glands is often sterile or contains but few bacteria; its bactericidal action has long been recognised, and was attributed by Ahlström (1895) to its lack of nutritive contents, by Bach (1896) to active germicidal power. Schulz (1905) obtained a Widal reaction from the tears of patients with enteric fever; various observers have proved that tears can prevent the growth of different sorts of bacteria, but are inactive against others.

Lindahl has made a long series of experiments in which streptococci and pneumococci were exposed to the action of tears. The tears were collected mainly from persons with stenosis of the lacrimal duct. Control experiments were always made simultaneously, in which the place of the tears was taken by 0·92 per cent. NaCl solution. After the bacterial culture (bouillon), mixed with the tears or the salt solution, had been kept in the thermostat for a certain length of time, a measured volume of it was plated in a Petri capsule with agar or ascites-agar. The capsules were placed in the thermostat for 24 hours,

and then the colonies that had grown upon them were enumerated by a Wolffhügel's counting apparatus. Mixing cultures of pneumococci and tears, and keeping them for from 1 to 22 hours at 37°C., Lindahl found that the bacteria were sometimes killed (or prevented from growing) by the tears, sometimes not. Previous heating of the tears to 100°C. for four or five minutes lessened this inhibitory action on the growth of the pneumococci. Streptococci taken from a scarlatinal sore throat grew much less readily, or not at all, after admixture with unheated tears; the heated tears did not impair their growth in the least.

This bactericidal power has been variously attributed to the cellular elements, the protein constituents, or the salts contained in tears. Measuring the alkalinity of 17 samples of tears from 2 to 48 hours after their collection, the author found it equal to that of a 0·32 (0·24 to 0·40) per cent. solution of caustic soda, the figures for human blood being 0·34 to 0·39 per cent. He has made a number experiments designed to illustrate the bactericidal action on varieties of the staphylococcus of the salts contained in tears and their alkalinity, and finds that they cannot explain it. He finds that the reaction of the medium certainly does influence its bactericidal power; but concludes that tears contain some enzyme which kills the microbes. This enzyme has hardly any bactericidal action at from 2° to 5°C.; it is not destroyed by heating to 58° or 60°C. for 1½ hours, but does not survive 68° or 70°C. for half an hour. It is not present in the serum of the patients supplying the tears. A. J. Jex-Blake.

Comessatti (G.). **Degenerative changes in the Leucocytes studied fresh.** *Riv. crit. di clin. med.*, 1907, p. 324.

The author has studied sudanophilia in 75 cases of various diseases. In 30 cases of pneumonia and broncho-pneumonia, from 30 to 80 per cent. of the leucocytes were found to contain sudanophil granules; the percentage was highest at the beginning of resolution, and falls to zero during convalescence. In 11 cases of cerebro-spinal meningitis the sudanophils varied from 35 to 80 per cent. of the leucocytes, being highest when the cerebro-spinal fluid was purulent. In three cases of enteric fever the sudanophils numbered 25 to 30 per cent., falling to zero at the end of the disease. Sudanophilia was little marked or absent in apyretic cases of tuberculous abscess, in diabetes, in anthrax and in certain chronic suppurative conditions.

Comessatti concludes that sudanophilia is not a specific phenomenon; the granules of fat have often been taken up phagocytically by the leucocytes in which they occur. Sudanophilia is most marked in the polymorphonuclear leucocytes; the eosinophils and mononuclears rarely, the lymphocytes and neutrophils almost never, contain sudanophil granules. In uncomplicated enteric fever sudanophilia was shown by 20 to 25 per cent. of the white cells; a low percentage of sudanophils may be of service in the diagnosis of tuberculous from other forms of meningitis. A. J. Jex-Blake.

Buttino (D.) and Quarelli (G.). **Sudanophil Leucocytes in the Blood.** *Riv. crit. di clin. med.*, 1907, pp. 321 and 337.

Cesaris-Demel and others have emphasised the importance of the fatty sudanophil granules often found in the leucocytes of human blood. The authors have specially examined the blood of 70 patients with infective or suppurative disease, noting the percentage of leucocytes containing these granules. The specimens were stained with 0·2 per cent. Sudan III. and 0·1 per cent. brilliant cresyl-blue, each in absolute alcohol. It is also recommended to fix blood-smears in formaldehyde vapour, to stain them in 0·25 per cent. alcoholic Sudan III., to wash them rapidly in water, to counter-stain with hæmatoxylin or hæmalum, and to mount in glycerine; this method is slower, but has the advantage of giving more permanent preparations.

Speaking generally, persons with pneumonia or a suppurating focus have leucocytes of which 50 to 90 per cent. contain sudanophil-granules; while in other diseases the percentage varies from 0 to 10 per cent. or so. In four cases of tuberculous meningitis the percentage was only 15, while in eight cases of cerebro-spinal or pneumococcal meningitis it was from 50 to 90 per cent.

A. J. Jex-Blake.

Fischl (L.). **Pathology of Catarrhal Jaundice.** *Arch. f. Verdauungskr.*, 1907. Vol. xiii., p. 70.

It is the custom to accept without comment the statement that gastro-duodenal catarrh goes hand-in-hand with catarrhal jaundice. The writer considers that this has never been proved, and describes three typical cases of catarrhal jaundice (one early and two late) in which there was increased acidity of the gastric contents after a test breakfast and in which no inflammatory cells were found in the washings of the empty stomach. It is probable that the initial inflammation in catarrhal jaundice is in the small rather than in the large bile passages.

E. B. Leech.

Schütz (E.). **Elastic Fibres in the Stomach Walls.** *Arch. f. Verdauungskr.* Vol. xiii., p. 49.

The writer has found orceïn, made up as follows, to be the most satisfactory stain for elastic fibres:—

Orceïn	1 gram.
Official nitric acid	2 grams.
Alcohol 70 per cent.	100 grams.

This should be kept uncorked before use, otherwise the stain degenerates. Sections are cut in celloidin, taken through 70 per cent. alcohol and then left in the orceïn stain for 48 hours. After half a minute in 95 per cent. alcohol they are left in water for a few minutes and dipped rapidly into picro-fuchsin. Next they are washed in water

quickly, and for half a minute in 95 per cent. alcohol; after this they are placed on a slide, pressed with filter paper, cleared with origanum oil and mounted. Elastic fibres become dark-brown; other tissues are lightly stained with the picro-fuchsin.

Elastic tissue is found in the following positions: (1) in the muscularis mucosæ close to the deep terminations of the secretory glands. Here there is a layer of closely-set fibres passing in various directions; offshoots pass between the glands, extending half-way along their length, and form a network around them; (2) in the submucosa, as irregular strands, best developed round the blood-vessels; (3) in the muscular coat; here it is in two layers, one internal to the inner muscle coat, the other between the inner and outer muscle coats; these two layers are connected by elastic strands which wind between the muscle fibres; (4) in and beneath the serous layer; here there are narrow wavy longitudinal bundles. The fibres in the different layers are developed best in different parts of the stomach; those in the muscularis mucosæ are prominent at the cardia and pylorus, but the branches from this layer which pass between the glands are best marked at the fundus. The submucous layer is well defined at the pylorus. The inner muscle layer is best marked at the fundus and the outer layer at the cardia; both of these layers are absent at the pylorus. At the cardia no elastic fibres are found beneath the serous membrane. The writer suggests that this distribution may be due to the function of different parts of the stomach. Illustrations show clearly the arrangement of the elastic fibres.

E. B. Leech.

Therapeutics.

Dopter. **The curative effects of Anti-dysenteric Serum.** (*Arch. des maladies de l'appareil digestif*, Paris, 1907, i., p. 79).

In 1898 Shiga produced the first anti-dysenteric serum; Kruse (1903) made a similar anti-microbic serum, and both these serums lowered the percentage mortality of the disease considerably. In 1904 Rosenthal employed an anti-toxic and anti-mocrobic anti-dysenteric serum, made by injecting the toxins and the living bacteria of dysentery alternately; this anti-serum was employed with success in the Russo-Japanese war. In 1904–05 the author and Vaillard made use of an anti-dysenteric serum prepared by injecting horses for two years with cultures and toxins of B. dysenteriæ alternately. This serum was both anti-toxic and anti-bacterial, and gave good clinical results. Dopter sums up these results as follows:—If the anti-serum treatment is begun early in the attack, strikingly good and rapid results are observed at once—in 1—6 days, according to the severity of the disease; and the length of the convalescence is much reduced as well. The treatment is suitable for all cases of bacterial dysentery (*not* for the amœbic form), whether mild or severe. The serum is given subcutaneously, preferably in the outer side of the thigh; 20 c.cm. are used in a mild case, 30 c.cm. in a severe, 50 c.cm. in a very severe case, and in forms of the disease that are usually fatal from 80 to 100 c.cm. must be injected. Mild cases may need only a single injection; a second or third dose (30 c.cm.) will often be required on the second and third day. In a grave case the injections are repeated daily, *pro re nata*. Intravenous injections (40 to 50 c.cm.) may be given in the most serious cases. In general, the injections are continued daily until the number of the stools falls to a few per diem, and the general state of the patient becomes satisfactory.

The anti-dysenteric serum of Dopter and Vaillard may give rise to the same inconveniences as any other anti-toxic serum—rashes, joint-pains, fever, headache, and collapse (transient only) after intravenous administration. The author thinks that a few rare cases of rapidly fatal dysentery may be beyond the power of this serum to cure. Bacterial dysentery may be diagnosed by culture of the microbe from the stools, by the agglutinating reaction, and by the presence of a marked polymorphonuclear leucocytosis without eosinophilia; in amœbic dysentery eosinophilia is observed. A. J. Jex-Blake.

Rodet (A.) and Lagriffoul. **Anti-typhoid Serum.** *La Presse Méd.* 1907. No. 4, p. 26.

In preparing an anti-typhoid serum from an animal the writers state that the difficulty is to obtain a serum whose specific properties shall be suitable in kind and degree, since they are multiple, and from the point of view of immunisation may even contain noxious factors. It is easy to obtain a serum with agglutinative properties, or one which, injected

into the peritoneal cavity of a guinea-pig in very small doses, will protect the animal against a fatal dose of a typhoid culture, but these have no therapeutic value. Even the presence of an undoubted bactericidal power does not *à priori* prove the serum possesses a marked therapeutic effect. The impossibility of infecting animals with the bacillus in the same manner as men adds to the experimental difficulty, and the production of a serum which will counteract an intraperitoneal injection need not necessarily be as efficacious when the bacilli are within the tissues; moreover antitoxic may be more important than bacteriolytic properties.

The writers believe, with Chantemesse, in the existence of a soluble typhoid toxin, and although the bacilli themselves are undoubtedly toxic, are of opinion that this does not prove such action to be due to an endotoxin as opposed to a soluble diffusible toxin. Other investigators have shown that by a method of appropriate immunisation it is possible to develop in the serum of an animal an antitoxic property as regards the toxic products of the typhoid bacillus, and the writers have endeavoured to increase such properties. In their preparation of a serum they have for some years past adopted the method of injecting living cultures into the veins of an animal, thus realising one of the essential conditions of typhoid fever, viz., the intimate connection of the living bacilli with the different tissues. All the specimens of serum obtained have been tried prophylactically by subcutaneous injection in guinea-pigs, in which about four hours subsequently fatal doses of living cultures were injected into the veins. As the result of numerous trials they can affirm the possibility of producing a serum possessing preventive properties as regards the septicæmic type occurring in the experimental disease. Expressing the existence of a prophylactic power by the + sign, that obtained in the manner described is designated + S, and the results by the more usual method of intraperitoneal injection as + P. Comparing the two methods of immunisation, they find that intravenous injection gives a high degree of protection, whilst intraperitoneal gives none or very slight, and they attribute the power in the former method to its antitoxic properties. Unfortunately the production of the power + S may be accompanied by the development of antagonistic noxious properties in the serum, designated − S. The two effects do not exhibit any definite relationship, and may show great differences in different serums. The writers have endeavoured to neutralise the property − S by the prepartion of anti-serums, but so far they have not been successful. R. W. Marsden.

Thompson (H. P.). **The prophylaxis of Scarlatinal Nephritis.** *Edin. Med. Journ.*, February 1907, p. 103.

The writer records his observations on 300 cases of scarlatina treated with urotropine, hexamethylene-tetramine and metramine. After briefly referring to the importance of diet, hydrotherapy, serum-therapy and cleansing of the throat, the use of a prophylactic drug is considered, and Dr. Thompson concludes that urotropine is the only one that has

proved itself to be of any value. He suggests that all cases of scarlatina should be treated from the beginning with 5 gr. doses of the drug thrice daily for children up to twelve years, and for patients above that age 7½ grs. thrice daily. In the administration the importance of dilution with water must not be overlooked, and it is recommended that the treatment should be continued to the end of the twenty-eighth day of the disease. R. W. Marsden.

Kramer (A.). **The treatment of the septic forms of Scarlatina.** *St. Petersb. med. Wchnschft*, 1907, p. 51.

From a consideration of the reports of various writers who have tried serum injections Dr. Kramer concludes that this treatment is devoid of lasting beneficial effect in this type of case. On the contrary, he greatly extols the use of formalin. His own practice is to give a tablet of formamint every hour from the first day for three or four days, and thereafter every two or three hours until the temperature is normal and the throat better. In addition he insufflates a powder composed of iodol nine parts and sugar one part every three hours, places warm compresses round the neck, and gives an enema of saline solution with one to three drops of formalin according to the age of the child.

Bryant (H. W.). **Guaiacol in the treatment of Typhoid Fever.** *The Australasian Med. Gaz.*, December 20, 1906, p. 626.

Dr. Bryant extols the use of guaiacol in typhoid fever, and records two cases of different types illustrative of its effects in keeping the temperature within bounds and otherwise ameliorating the patient's condition. The method employed is as follows:—According to the age and strength of the patient 5 to 15 drops are rubbed into the skin over the inner side of the thigh, or into any other part where it will not disturb the patient to use it. The rubbing is to be very gently done, and at first is continued from 10 to 15 minutes at a time. The part rubbed is then covered with lint, and oil silk protective is placed over this and fixed with a bandage. Some patients, he says, become very susceptible to the effect of guaiacol, and in such cases he has known one drop to have a most marked effect, so that they must be treated very carefully. After a few days' use the temperature drops, free diaphoresis sets in, and the patient may be inclined to shiver; the dose must then be considerably reduced and any tendency to collapse combatted. R. W. Marsden.

Stadelmann (E.). **Treatment of Typhoid Fever.** *Deutsch. med. Woch.* Nos. 47 and 48, 1906.

Prof. Stadelmann recommends the adoption of some form of hydrotherapy as a routine procedure, and speaks strongly against the use of any form of drugs, as antipyretics; he is also against the administration of alcohol as a cardiac stimulant, preferring for this purpose subcutaneous injections of oleum camphoratum and caffein sodium salicyate in large doses. Digitalis, he finds, does not act well, and is frequently tolerated badly.

Reviews.

"Guide to Anæsthetics, for the Student and General Practitioner." By Thomas D. Luke, M.B., F.R.C.S. (Edin.), Lecturer on Anæsthetics, Edinburgh University. Third edition; 43 illustrations. William Green and Sons, 1906. Price 5s. net.

"Anæsthetics, Their Uses and Administration." By Dudley Wilmot Buxton, M.D., B.S., M.R.C.P. Fourth edition. H. K. Lewis. Price 7s. 6d. net.

"Anæsthetics and their Administration: A Text-Book for Medical and Dental Practitioners and Students." By Frederic W. Hewitt, M.V.O., M.A., M.D. Third edition. Macmillan and Co., 1907. Price 15s. net.

"The $CHCl_3$ Problem." By Richard Gill, B.Sc., M.B., B.S. (Lond.), F.R.C.S. (Eng.). Two volumes. William Blackwood and Sons.

It is now some sixty-one years since the first introduction of general anæsthetics, during which period the annual output of literature on anæsthetics has varied considerably, and this variation is in itself of some interest. The anæsthetic properties of ether and chloroform were discovered respectively in the years 1846 and 1847, from which dates their use became general; but it was not until 1858 that any considerable scientific book on the subject was published. In that year appeared the classic work of Dr. John Snow "On Chloroform and other Anæsthetics." The author was seized with his rapidly fatal illness while in the act of writing the concluding sentences of the book, so that there have been no further editions. The work remains as the author left it, a monument of careful investigation, and in itself probably the most original and valuable single work on the subject that has ever been published.

When Dr. Snow died and for many succeeding years surgical operations were comparatively few, the demands on anæsthetics small and their value as a means of livelihood trifling; while, as a field for scientific investigation, little could be done in the dim light of the limited physiological knowledge of the day. Scientific investigators were too busy in the field of general physiology elucidating the action of the important vital functions to devote much attention to anæsthetics. Important advances, however, were made in the practical administration of anæsthetics, in the invention of apparatus, notably by Mr. Clouer, and in the introduction of nitrous oxide by Dr. Evans, but few, if any, books on the subject were published.

With the introduction of antiseptics and the development of surgery came a great increase in the number of all surgical operations, with increased demands upon anæsthetics. The number of men devoting themselves especially to anæsthetics became larger, and with this came

an increase in the number of works on anæsthetics. Of late years also physiologists have begun to devote attention to the anæsthetics, and have added considerably to our knowledge of their action.

The three books at present before us are good examples of recent works on anæsthetics, which may be described as small, medium, and large. All have been before the public for some time, and passed through several editions; they are clearly written, well printed, and freely illustrated, and each within its limits gives a good up-to-date exposition of the means of inducing general and local anæsthesia. It will be convenient to briefly refer to each individually and then consider a few points of general interest.

Dr. Dudley Buxton's book, the first to appear, was brought out in 1890, and is now in its fourth edition. Compared with the second edition of 1892 it has been increased from 216 to 400 pages, with 63 illustrations as compared with 30. The writer aims at placing "before the reader only such facts and theories as he deemed to be essential and methods which he has personally tested." The work is such as one would expect from a man of Dr. Buxton's scientific attainments and experience. It is well arranged, pleasantly written, and, within moderate compass, contains a most complete account of the theory and practice of modern surgical anæsthesia. It possesses the advantage, shared by neither of the other books, of having a useful chapter on the medico-legal aspects of anæsthesia.

Dr. Hewitt's book first appeared in 1893, and has now been increased in size from a book of 332 pages with 56 illustrations to the present handsome volume of 611 pages with 72 illustrations. The author's intention has evidently been to make the book as full and complete as possible and to incorporate in it all the new material of value. In this he has been eminently successful, and has produced a manual which is most comprehensive in its scope. Two long chapters are devoted to thorough consideration of the physiology of anæsthesia and other sections of the subject are equally fully treated. There are numerous tables and many reported cases described to illustrate various methods of inducing anæsthesia or exceptional difficulties that may occur. When it is remembered that there is hardly an anæsthetic apparatus in use which is not referred to, if not illustrated, and that the list of authors quoted contains 488 names, some idea will be obtained of the comprehensive manner in which the work has been performed. Indeed it is difficult to imagine how the work could have been made more complete, for nothing appears to have been omitted.

The third book on the list aims at giving "a fairly comprehensive account of the practice of anæsthetics at the present day." It is a well written handbook of 123 pages with 43 good illustrations, which admirably fulfills the objects of its author, who is to be congratulated at having got so much useful information into so small a space. There is one slip at the commencement—the first fatal chloroform accident occurred in the hands of Dr. Meggison and not Sir James Simpson, as stated on page 6.

In turning over several books on anæsthetics one seeks information on various points; the chief of these is the position of ethyl chloride. There is a general consensus of opinion that ethyl chloride is a most convenient and in suitable cases a safe anæsthetic for short operations, and well adapted as an introduction to ether anæsthesia. Dr. Buxton says: "It is probable that chloride of ethyl is less safe than nitrous oxide, and must be placed between ether and chloroform in normal patients;" he also mentions two cases in which alarming symptoms supervened in patients in average health.

Dr. Hewitt believes "that the risk attending its administration is considerably greater than was at first supposed," and surmises "that the near future will witness a considerable limitation rather than an extension in its use."

Dr. Luke, who has had a large experience with ethyl chloride, has only had one or two cases of respiratory arrest out of some two thousand administrations. He gives a list of twenty-three fatal cases which have occurred since 1900.

In the matter of the administration of chloroform by special regulating apparatus, which has been recently brought before the profession, of the three authors, Dr. Buxton seems most inclined to advocate the use of percentage inhalers, such as the Harcourt inhaler, in which we agree with him. All three, however, are agreed in condemning too much reliance being placed upon apparatus, for no mechanism, however perfect, can make up for want of skill in the administrator. A pronouncement with which everyone will agree.

Delayed chloroform poisoning, otherwise known as "acidosis," is very fully treated by Dr. Hewitt, though without having himself seen an evident case. He comes to the conclusion that there is considerable evidence that under certain conditions anæsthetics may bring about the degenerative changes responsible for these symptoms, but that at present it is impossible to come to any definite conclusion.

The "status lymphaticus" or "thymicus" which has been recently introduced as being a special danger in chloroform inhalation is referred to only in Dr. Hewitt's book. He says that "the evidence in favour of this assumption is not convincing," also "that the cases of supposed primary heart failure under anæsthetics have been misinterpreted." As regards the susceptibility of patients to anæsthetics, it is of interest to note that Dr. Hewitt has had one case in which he failed to produce anæsthesia. The patient was a thickset man, a moderate drinker, who had previously given trouble under nitrous oxide. The anæsthetic used was nitrous oxide and ether, which produced so much maniacal excitement that no operation could be performed.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

CASES ILLUSTRATING THE APPARENT BENEFICIAL EFFECT OF ONE DISEASE UPON ANOTHER.

A Communication given at a Meeting of the Association of Physicians in London, 1907,

By JUDSON S. BURY, M.D. (Lond.), F.R.C.P.,
Physician to the Manchester Royal Infirmary.

Mr. President and Gentlemen,

I would ask your brief consideration of two cases, which appear to illustrate the beneficial effects of one morbid process upon another. In the one case rapid improvement of severe cardiac failure followed an attack of cellulitis, in the other, symptoms indicating disseminated sclerosis passed away after a severe attack of smallpox. Many similar instances have been recorded, thus erysipelas is stated to act beneficially on sarcomata and on chronic ulcers. Vaccination is believed to exert an inhibitory action on whooping cough. Chorea has improved under the influence of the poisons of acute diseases.

Dr. Harry Campbell [1] has collected a large number of cases illustrating the occasional beneficial effects of one disease upon another, and Dr. Rolleston [2] has written a suggestive paper on the antagonism of some diseases. In addition to the two cases which I am about to relate to you, I can recall a case of severe whooping cough in a boy which quickly subsided during an attack of urticaria, and one of severe neuralgia which disappeared during an attack of bronchitis.

The first of the two cases to which I would ask your attention

1. "Brit. Med. Journal," 1898.
2. "The Medical Magazine," 1900.

is that of a man aged 44, who was recently under my care at the Manchester Royal Infirmary. On admission he was suffering from cough, dyspnœa, anasarca and albuminuria. These symptoms were found to depend on cardiac muscle failure. The heart was much enlarged, its action was rapid and irregular, and there were signs of mitral regurgitation. The backward effects were indicated by dyspnœa, enlargement of the liver, œdema of the legs, and albuminuria. During the first seven weeks his condition was very serious and in spite of strychnine and digitalis and other treatment he seemed to be getting worse. One night during the eighth week his condition was so alarming that strychnine was injected hypodermically into the right arm. This was followed, probably owing to imperfect sterilisation of the needle, by a severe cellulitis of the arm and the whole limb became greatly swollen. Suppuration occurred on the back of the forearm and required incision. The arm remained swollen for two or three weeks, but two days after the onset of the swelling the general condition of the patient had improved—his breathing was easier, his pulse slower and stronger, and he made a gradual recovery and left the hospital convalescent. Last week, that is nearly four months after his discharge from hospital, he came to see me again. He walked into the ward looking bright and vigorous, told me his breathing did not trouble him and that he felt quite well. On examination there was no œdema and there were no signs of cardiac enlargement. The urine showed a trace of albumin but no casts were discovered. I asked him again about his illness and he seemed quite confident that the improvement dated from the swelling of his arm.

The case gives rise to many reflections. In the first place had the improvement anything to do with the attack of cellulitis or did it occur independently and in spite of it? We have all observed cases of heart failure which after a time suddenly began to improve without any assignable cause. On the other hand if we assume that the cellulitis acted as a curative agent, what is the explanation? Without entering into unprofitable speculation, the following questions occur to one. Is alcohol per se the cause of cardiac failure, that is does it act directly on the heart muscle, or is it merely a predisposing factor causing diminished resistance on the part of the heart muscle, and thus

enabling some unknown toxin to act upon it. In this connexion let us glance at cirrhosis of the liver. Many pathologists believe that the condition is not due to the direct effects of alcohol, but that alcohol sets up a gastritis, which leads to the production of toxins, and that these taken up by the portal circulation start the cirrhosis. Others believe that the toxins are derived from micro-organisms, which attack the mucous membrane weakened by alcohol. In the case of the heart I believe that a similar explanation is probable—the clinical history of alcoholic hearts is more in accordance with a local toxæmic condition than with the direct effects of alcohol, and if the toxins are of microbic origin then the introduction of the corresponding antitoxins would counteract their effects. If then the improvement in the case related depended on the cellulitis the only explanation that occurs to me is that cardiac failure in chronic alcoholism depends on toxins the products of micro-organisms which attack the muscle weakened by the circulation of alcoholic blood.

The second case is that of a man who had a febrile illness of uncertain nature in July, 1903. This was followed by weakness of the legs, and he began to stagger in walking. I saw him on December 10th, 1903. There was weakness of the flexor movements of the legs, and also some inco-ordination in walking. The knee jerks were exaggerated. Slight lateral nystagmus was present but no tremor. The left half of the tongue was much wasted, and articulation was impaired. I concluded that he had disseminated sclerosis, and I attributed the atrophy of the tongue to a patch of exudation in the nucleus of the left hypoglossal nerve. Three years later his doctor (Dr. Clarke of Dukinfield) sent for me to see another patient, and in the course of conversation reminded me of the case just related; he told me that the man was now quite well and that his improvement began after an attack of smallpox. He told me that the patient became much worse after December, 1903, and was obliged to stop in bed for six weeks; during this time his legs became weaker and the nystagmus more marked. Shortly afterwards he was seized with smallpox, and remained in hospital for five or six weeks. He made a good convalescence and then began to notice that his former symptoms—the staggering and the dragging of his feet—were much better, and in a few weeks he was quite

well. On hearing this account I said I should very much like to see the patient again. In response to my request Dr. Clarke sent him to see me a few weeks ago; this was about $3\frac{1}{2}$ years after his first visit. On examination I could detect nothing wrong with his limbs; the gait was normal; there was no nystagmus and no defect in speech. The left half of the tongue, however, was still atrophied.

Here again one naturally asks, was the improvement a mere coincidence or was it related to the toxins of smallpox? We are all familiar with the temporary improvements which occur during the course of disseminated sclerosis. In the early stages decided paralysis of a limb may entirely pass away. What is the explanation? We assume that the paralysis is due to a toxæmic exudation in some part of the motor path, and that recovery from paralysis indicates absorption of such exudation. How is this brought about? We have to fall back on nature's resistance to disease, which means, I presume, a sufficient development of antitoxins to counteract the effects of the toxins which set up the exudation. Sometimes the natural antagonism is so great that in exceptional cases an actual cure of symptoms indicating a developed disseminated sclerosis is established. In this connection it is interesting to recall the onset of infantile paralysis, in which the initial is often so much wider-spread than the later paralysis, and where occasionally, as I have recorded,[1] it entirely disappears.

Such considerations enable one to admit the possibility that, in the case, which I have related, recovery depended on the virus of smallpox. At any rate you will agree with me that it is important to keep a record of such cases, and to study them in relation to our advancing knowledge of toxins and antitoxins. Experimental pathology has done much towards the successful treatment of disease, but I think there is still room for renewed observations on the natural clinical history of disease, on its modifications by intercurrent ailments and other incidents of its environment. Possibly as a result of such studies some thoughtful physician may be able to suggest a remedy which will anticipate the work of the experimental pathologist.

1. "Brit. Med. Journal," 1902.

OCCULT HÆMORRHAGE IN THE GASTRO-INTESTINAL TRACT.*

By Ernest Bosdin Leech, M.A., M.D., B.C. (Cantab.), M.R.C.P. (London), M.R.C.S. (Eng.), D.P.H. (Manch.), *Resident Medical Officer, Royal Infirmary, Manchester.*

INTRODUCTORY.

The term Occult Hæmorrhage was introduced in 1901 by Boas[3] of Berlin, to signify blood present in such small quantities only as to be invisible to the naked eye. The term is not applied, as one might think, to include larger hæmorrhages of doubtful origin. It is applied, in fact, not to the source of the blood, but to the quantity. Boas,[6] in 1905, gives the following definition: "Solche minimalen Blutungen die, aus den oberen Verdauungswegen stammend den Mageninhalt und die Fäces, aus den tieferen Darmabschnitten stammend nur die Fäces, farblich in keiner, dem blossen und bewaffneten Auge erkennbaren, Weise verändern."

"Blood occurring in the gastric contents or fæces in case the hæmorrhage takes place in the upper part of the gastro-intestinal tract, or in the faeces alone when from the lower part, but in either case so small in quantity as to give no colour change to the naked eye or under the microscope."

The fact that in the somewhat lengthy bibliography which I have appended to this thesis, not one reference occurs to an article based on investigations made on occult hæmorrhage in England, itself affords a reason for working at a field of medicine so little touched on as this portion of the early diagnosis of digestive disease.

Certain points are essential if this method of diagnosis is to come into general use, in other words, if the tests are to be available to practitioners. The apparatus must be inexpensive and simple. The test tube is preferable to the microscope or spectroscope. The test must be rapid; it must not be too fine nor too crude. The work, however, on this subject is all the more easy, that one does not want to detect the minutest traces of blood; the finest tests give rise

* A Thesis awarded the Degree of M.D. (Cantab.).

to too many fallacies. A difficulty experienced in Germany, and to a greater extent in England, is that of handling the material to be examined. There is a natural repugnance against examining stools and vomit even visually, and if routine examinations are ever to become a help in the diagnosis of digestive diseases, it is essential that only a small quantity of the material be required. Perhaps it will be well to state here that where blood is intimately mixed with the stool, as occurs in the case of gastric hæmorrhage, a small quantity of the stool is quite sufficient for a satisfactory examination. An amount the size of a hazelnut is amply sufficient.

While earlier writers applied their tests, some to vomit, others to stomach contents obtained by test meals, most of the recent work has, for reasons stated below, been done on the stools, and it is practically on these alone that I have made by investigations.

Two points strike the worker early. One is the large amount of fresh blood which can be *lost* to the naked eye when mixed with stools or vomit. Many drops of blood can be mixed with two or three cubic centimetres of vomit without causing any change of colour, and, as might be expected, an even larger amount is necessary to alter the colour of the stools. The second point is that many stools sent for examination as containing no visible blood, do clearly, to the experienced eye, contain digested blood. It has, in fact, been pointed out from time to time by many writers, that a naked eye examination of the stools and vomit reveals blood in a very much greater number of cases than is usually supposed. This statement applies especially to cancer of the stomach.

I thank the Physicians of the Manchester Royal Infirmary for the help they have given to me.

HISTORICAL.

1. Chronological Account of more important work done on Occult Hæmorrhage.

In the following chronological account I give an abstract of the work of those writers only, who have played an important part in the study of occult hæmorrhage either in its chemical or clinical aspect, or who have led up to the study of it by drawing attention to the frequency of gross hæmorrhage, which was in former times and even now is so frequently overlooked.

1862. Brinton [8] states that hæmorrhage while less frequent than pain and vomiting as a symptom of carcinoma of the stomach is present in 42 per cent. of cases. "In about one-sixth of the instances the hæmorrhage is sufficiently copious as to be recognised as tolerably pure blood. The remainder include a great many cases in which the blood appears to have been more or less mixed with gastric juice, food, bile, or softened cancerous substance, and to have undergone a variable change of colour, such as would impart to it a blackish, brownish or coffee ground appearance. But the frequency of hæmorrhage is doubtless much greater than the above statements suggest. Indeed the pathology of cancer in general, together with the history of this particular malady, will quite entitle us to suppose that some hæmorrhage rarely fails to occur save in those instances in which the patient dies before the ulceration or softening of the deposit."

1886. Korczynski and Jaworski [28] working with gastric contents state that in twenty-four cases diagnosed as gastric ulcer blood was recognised in six by direct means. Experimentally they prove that blood cells are destroyed very quickly in the stomach. They suggest the ferrocyanide Prussian Blue test as the most suitable for small quantities of blood.

1890. Harttung [22] argues that stomach hæmorrhage may be due to minute "Faltenblutungen," or erosions on folds of the stomach mucous membrane.

1890. Schuster [57] examined twenty-five stools with the guaiacum test. All were doubtless free from blood, but five gave the reaction even when boiled.

1893. Weber.[74] It is to this writer that we owe the tests for blood in intestinal contents as generally carried out at present. He applied Seifert and Müller's method of blood extraction to vomit and stools and tested for hæmatin, not with the spectroscope as they had done, but with Van Deen's guaiacum reaction. He examined normal stools, finding these always negative, and those of patients taking various drugs, with a similar result. He also studied the action of various food stuffs and body secretions. He found that apart from blood swallowed in uncooked meat or otherwise, this test gives a diagnostic reaction for hæmorrhage in the digestive tract.

1895. Kuttner [31] believes that gastric hæmorrhage frequently occurs at the menstrual periods, and lays stress on the fact that small hæmorrhages give no colour change to vomit.

1897. Ewald [13] points out that severe anæmias may be caused by frequent small hæmorrhages, and emphasises the importance of tests for their detection. Small amounts of blood pass altogether unrecognised.

1898. Nothnagel [39] says that unaltered blood corpuscles appear in the stools more frequently than they are generally supposed to appear.

1901. Boas.[3] While it is to Seifert and Müller, and Weber, that we owe our methods of testing for blood, it is essentially Boas who has first shown the clinical value of these tests. His early examinations were made on gastric contents by means of the guaiacum test, and in this his first paper he gives his results in 83 cases. He divides stomach disease to three classes according as blood appears—"nie," "gelegentlich," or "ständig." In the first he places neurosis, anacid gastriits, hyperacidity, and benign ectasis. In the second class he places gastric ulcer and pyloric stenosis, and in the third carcinoma of the stomach. Having found visible blood in the stools of 36 per cent. of his patients suffering from stomach carcinoma he thinks that great value might accrue from systematic examination for occult blood, especially in this disease. At the same time he thinks that positive results are only likely to occur where ulceration is present. The anæmia of intestinal carcinomata may be due to hæmorrhage, and the beneficial results of gastro-enterostomy may depend largely on the removal of irritation. The test is likely to be of therapeutic as well as diagnostic interest, and no case of gastric ulcer can be considered cured where hæmorrhage persists. He refuses to give an absolute positive or negative diagnosis on a single test.

1902. Boas and Kochmann [4] now writing on the results of two years' work, report examinations mainly on stools, which they consider more reliable than stomach contents. Where stomach contents are used they prefer the results of an Ewald's test breakfast to vomit. In contrast with his former paper Boas now thinks that non-malignant dilatation of the stomach should be placed in the "gelegentlich" class. As long as there is a residue in the

stomach so long do the contents give a positive reaction. If this residue is prevented then the blood reaction is negative.

1902. Kuttner[32] considers that hæmorrhages do occur in achylia gastrica, and in this point disagrees with Boas.

1903. Rossel [48] describes the aloin test and recommends it, not to displace, but to check the guaiacum reaction.

1903. Trembur [73] experimented on animals to find the proportion of hæmoglobin that is absorbed by the intestine. Using hæmatogen he found that 60 per cent. of that taken could be found in the fæces. These results are of interest as showing the probability that the hæmoglobin of underdone meat will appear in the stools.

1904. Joachim [26] gives his results of 400 examinations on many diseases and is apparently the first to study the value of occult hæmorrhage in typhoid. He also suggests the possibility of occult hæmorrhage being premonitory to gross bleeding.

1904. Adler (O. & R.) [1] These workers examined many chemical compounds in order to find some giving finer colour reactions than guaiacum. They found benzidin and malachite green to be the most satisfactory, and suggested the former, especially for the fæces.

1904. Tedeschi [67] worked at the occult blood tests in typhoid; he obtained no positive reactions in the first two weeks, and in the third week only in three out of twenty-four cases. In one of these cases occult hæmorrhage preceded gross hæmorrhage by three days.

1905. Steele.[60] The article of this date is claimed by the writer to be the first in the English language on occult hæmorrhage.

1905. Siegel [59] like others of the Münich School, says that other tests should be used to control the colour tests, and says that he still uses Seifert and Müller's hæmatin spectrum test.

1906. Ewald [16] having made 1,000 tests for occult blood does not believe that the method is as valuable as stated generally. He says, "Diagnosis is not only not made easier by showing occult blood, but is made more difficult." He believes that the method is pathognostic rather than diagnostic, and compares the finding of blood to the finding of sugar in the urine where no other symptoms are present. In spite of this adverse criticism the writer points out many advantages.

1906. Schumm [54] working at the tests from a chemical point of view suggests a modification of the guaiacum test probably too fine, and certainly too complicated for routine use.

1906. Schlesinger and Holst [51] in attempting to obtain the most simple test for clinical use come to the conclusion that boiling is a sufficient preliminary preparation of the stools as long as the benzidin test be used, and recommend this method in preference to all others.

1907. Cowie [12] made some of the most accurate observations yet published on the smallest amount of blood which can be detected by the methods in vogue, and on the fallacy caused by blood in food.

2. Chronological account of various tests for blood apart from their application to occult hæmorrhage.

I add a list referring to some of the tests used in my research, not, however, referring to their application to the digestive tract.

1861. Van Deen [81] suggested the guaiacum test for blood, and recognised the fallacy introduced by the presence of iron.

1867. Schönbein [89] showed that same substances produce blue with guaiacum even when no hydrogen peroxide or turpentine are added.

1874. Almen [78] recommended the guaiacum test for blood in the urine.

1882. Klunge [83] introduced the aloin test.

1889. Brücke [80] showed that boiling, while preventing the guaiacum reaction for pus, did not interfere with it for blood or free iron.

1889. Seifert and Müller [58] explained the method of separation of blood from other substances which oxidise guaiacum, by means of extraction with acetic acid and ether. They applied the spectroscopic test to the hæmatin obtained.

1900. Brandeburg [79] suggested that the property which pus has of forming guaiacum blue is due to nucleo-proteids which are active in great dilution.

1901. Strzyzowski [66] suggested a modification of Teichmann's hæmin crystal method by the use of hydriodic instead of hydrochloric acid.

1904. Laidlaw [84] in an article on blood pigments points out that hæmin while easy to obtain from hæmoglobin is formed with difficulty from hæmatin. Other writers suggest that the formation of hæmatin in the intestine is perhaps the reason that the crystals of hæmin are so difficult to obtain from the stools.

3. Description of various tests suggested.

1. *Microscopic and Macroscopic.*

Writers: Korczynski and Jaworski,[28] Weber,[74] Kuttner,[31] Nothnagel,[39] Boas,[3] Schmilinsky,[53] Schumm.[54]

The opinion of most writers is that relatively large quantities of blood may be missed macroscopically and that red corpuscles are destroyed so quickly in the intestine and stomach that the microscope is of little use in detecting occult hæmorrhage. Thus Weber says that red blood corpuscles are not found even in the hæmorrhage of typhoid fever, and Schumm that as much as 5 per cent. may be missed with the naked eye. Nothnagel, on the other hand, states that a careful examination reveals blood cells much more frequently than one might expect, and Brinton [8] and others say that in carcinoma of the stomach visible hæmorrhage occurs in a large number of cases.

2. *Heller's Test.*

Writers: Weber,[74] Kuttner,[31] Clemm,[11], Falloise.[16]

Kuttner, quoting from Boas' Diagnostik, says that to the material to be tested an equal quantity of normal urine is to be added; the mixture is made alkaline with K O H, and then heated to boiling; the precipitate of phosphates is red if hæmatin be present and appears dichroic in thin solution. If there be doubt about the colour, the precipitate should be collected on a small filter and dissolved in acetic acid. The solution becomes red and on standing gradually colourless. This test is weak for urine and worse for fæces.

3. *Ferrocyanide Test.*

Writers: Korczynski and Jaworski,[28] Kuttner,[31] Strzyzowski,[60] Boas and Kochmann,[4] Clemm,[11] Falloise.[16]

Korczynski and Jaworski place a small portion of the stool in

a porcelain dish and mix with it a small quantity of potassium chloride and concentrated hydrochloric acid. They then heat slowly over a small flame and add hydrochloric acid till the dark colour of the sediment disappears. When all chlorine is gone they add 1-2 drops of 10 per cent. potassium ferrocyanide solution. If hæmoglobin is present a blue colour appears.

These two writers as well as Strzyzowski favour this test, but the rest consider that though sensitive it is too complicated. All forms of iron must be rigorously excluded from the diet.

4. *Crystals formed from Blood.*

i. Teichmann's hæmin crystals.

Writers: Weber,[74] Strzyzowski,[66] Boas and Kochmann,[4] Clemm,[11] Siegel,[59] Falloise,[16] Schumm,[54] Laidlaw.[84]

The universal opinion is that this method is not practicable for the small quantities to be detected. This depends, perhaps, on the fact that while hæmin crystals are easily formed from hæmoglobin, they are formed with difficulty from hæmatin.

ii. Strzyzowski's modification of Teichmann's test.

Writers: Strzyzowski,[66] Kobert, Boas and Kochmann,[4] Clemm,[11] Falloise,[16] Schumm.[54]

A minute portion of the stool is pressed between white paper or, if very moist, between filter paper. It is placed on a slide and a drop of sodium iodide solution ($^1/_{500}$) is added. The material is dried, a coverslip is applied, a glacial acetic acid is run under it. This is then heated for a few seconds to boiling. If blood is present dark coloured crystals of the H I salt of hæmatin are seen. They are very deeply coloured but vary in shape. Sometimes it is necessary to extract fat with chloroform and alcohol.

The inventor alone supports this test. The other writers consider that the skill necessary is too great.

iii. Donagani's hæmochromogen crystals.

Writers: Clemm,[11] Ewald.[15]

A drop of pyridin is shut up with blood and a drop of ammonium sulphide solution in a ring of Canada balsam under a coverslip. The easily distinguishable long tailed crystals, split at one end, are formed.

Ewald does not recommend this test.

iv. Chloral hydrate method.

Writers: Schär,[87] Rossel.[48]

Rossel gives a full account of this process of which the following is an abbreviation: Fæces are dried in a water bath and the fat is extracted in a Soxhlet apparatus. The resulting powder is digested with twice its volume of 70 per cent. ethereal chloral hydrate solution. This process is repeated four times. The powder is then washed in the same way with a mixture of acetic acid and ether, and to the extract are added two or three volumes of water. The ether is distilled off, and the acetic acid is neutralised with K O H. Chloroform is formed from the K O H and chloral, and this is distilled off on a water bath. Hæmatin is precipitated and is filtered off and washed on the filter paper. It is next treated with ether mixed with strong acetic acid, then the ether is driven off by evaporation and the acetic acid is brought to a syrupy consistence. A drop of this is placed on a slide, is covered with a small coverslip, and warmed in a small flame. The dark brown fluid becomes clear grey and on further heating becomes darker with formation of needle-shaped crystals.

v. Acetone hæmin crystals.

Writers: Nencki and Zaleski,[85] Clemm,[11] Boas,[6] Ewald,[15] Schumm.[56]

All the other writers say they can obtain no results by following Clemm's instructions. Schumm even by the following method is not successful if less than 4 per cent. of blood is present, and in some cases when the stool is tarry. He takes five grams of the stool, adds 20 cc. alcohol and 20 cc. ether, and rubs the whole in a mortar. The mixture is filtered and the residue on the filter washed with alcohol and ether, and finally with ether. It is then placed in a beaker with 10 cc. acetone and five drops of 25 per cent. H Cl and heated for half a minute. Some cc. of acetone are added and the whole is filtered. If the filtrate is allowed to evaporate slowly crystals appear; these are long, wavy, and hair-like. Soaps, however, are left in the residue of the acetone-H Cl extract, and may cause trouble. The writer makes suggestions to prevent this.

5. *Spectroscopic Tests.*

i. Acid hæmatin.

Writers: von Leube,[34] Seifert and Müller,[58] Weber,[74] Kuttner,[31] Strzyzowski,[66] Siegel.[59]

A small portion of the stool is shaken with water in a test tube, a few drops of concentrated acetic acid are added, and the whole is shaken with one-fifth its volume of ether. In a few minutes a clear layer of coloured ether separates. If turbid a few drops of alcohol will clear the ether. The ether assumes a brown pink colour if blood be present.

Acid hæmatin shows four bands, (1) in red, (2) in yellow, (3) boundary of yellow and green, (4) boundary of green and blue. Usually only that in the red is seen, and owing to a similar band given by chlorophyl confusion may arise. If, however, the ether extract be shaken with an equal volume of concentrated H Cl the chlorophyl is taken up by the acid, and only the hæmatin lines are seen in the ether. This method of acetic ether extraction, by which the blood pigment is separated from most of the other pigments, was introduced by Seifert and Müller. It forms the first step in nearly all the methods now in vogue.

Siegel, writing in 1905, states that in Munich this method is still used to control the guaiacum test. It is, however, not so fine as the colour tests.

ii. Alkali hæmatin.

Writer: Strzyzowski.[66]

If the stools are heated with 15 per cent. NaOH, a broad absorption band is seen between the red and green in D.

iii. Reduced hæmatin or hæmochromogen.

Writers: Weber,[74] Siegel,[59] Boas,[7] Schumm,[54] Schumm and Remstedt,[55] Grünwald.[20]

Some cc. of a watery emulsion of the stools is shaken with an equal quantity of 10 per cent. K O H. The mixture is then placed on a filter, and a few drops of the filtrate are treated with ammonium sulphide and examined spectroscopically (Grünwald).

Weber and Siegel recommend extraction of acid hæmatin with acetic acid and ether, and neutralisation of this with alcoholic solution of alkali. Instead of ammonium sulphide, one may use hydrazin hydrate. Two bands which are intense and in a clear

part of the spectrum are seen; (1) midway between D and E; (2) somewhat narrower and less dark between E and b. The chlorophyl spectrum cannot be mistaken for that of reduced hæmatin.

This is apparently the best of the spectroscopic methods, but even here the most favourable estimation for it (and this by a more laborious method of examination) is that 4 per cent. is detected in the stools. With mere filtration it may be difficult to obtain a clear fluid.

iv. Hæmatoporphyrin.

Writers: Nencki and Zaleski,[85] Strzyzowski,[69] Joachim,[26] Clemm,[11] Siegel,[59] Dominicis,[82] Schumm.[54]

The stool is rubbed up with water and concentrated acetic acid, and is then extracted with ether. To this extract two or three times its volume of concentrated sulphuric acid is added.

The spectrum of hæmatoporphyrin consists of a weak absorption band at D, and a more marked one between D and E. These bands are seen at once if at all, but the test is not so delicate as the hæmochromogen test.

It may be carried out by the direct action of strong sulphuric in the stools, but the charring which occurs hinders the passage of light and so makes the examination difficult.

v. H C N compound.

Writer: Grünwald.[20]

Some of the stool is suspended in water and a few cc. of watery K C N solution are added; the mixture then stands for some hours. A broad pale band appears in the yellow between D and E; on adding ammonium sulphide this is lost, and two sharply bordered, narrower bands appear. These two bands lie nearer the violet end than do those of hæmochromogen. They are also equal in width and intensity. They will appear by further treatment of a suspension which has been so much diluted that the bands of hæmochromogen have already disappeared. This test, though one of the finest of the spectroscopic tests, is not of much practical value, owing to the time which elapses before the bands appear.

6. *Colour Tests.*

The blue colour given by a guaiacum resin in the presence of blood and a substance carrying oxygen in loose combination has

long been known. In more recent years it has been discovered that aloin gives a red colour under similar circumstances, and later still that benzidin, malachite green, and other substances each has an analogous reaction.

These colour tests, however, cannot be applied directly to the stools, as other substances exist which give this colour change. Weber [74] divided these substances into three classes, as follows:—

(1) Food stuffs, as chlorophyl, milk, potato, cheese, and various vegetables, as beans.

(2) Body products. These include pus, saliva, bile, sweat.

(3) Inorganic bodies, as drugs. The most important of these is iron.

The exact chemical change which takes place in these tests has not been fully explained. In the case of blood it has been supposed that oxyhæmoglobin cannot transfer its loose oxygen to the guaiacum or other reagent directly, but can give it up to hydrogen peroxide or turpentine, and that these can in turn oxidise the colour reagent causing the change of colour. The oxygen carrying power of hæmoglobin depends on the presence of iron, and iron salts themselves have a similar though less powerful action. In the case of the other substances above-named the change is probably brought about, as suggested by Brandeburg, by means of oxidising ferments or oxydases.

Before describing the individual colour reagents I propose to give two methods by which difficulties in the colour tests arising out of the presence of extraneous substances may be overcome.

A. The boiling method.

As long ago as 1820, before the guaiacum test had been discovered for blood, Planché recognised that, while unboiled vegetable material oxidises guaiacum, boiled material does not do so. The same holds for body products, as pus and milk. Brucke, in 1889, recognised that iron and blood were not affected in the same way. It would seem then that if iron be excluded from the diet, and if the stools be boiled,the colour reaction depends on the presence of blood alone.

Schuster,[57] however, in 1890, usuing the guaiacum test, found

this method unsatisfactory, for five cases out of twenty-five where no blood was present in the stool gave a positive reaction.

There is a distinct difference in the activity of the various colour reagents used. Thus, while benzidin is much more active than guaiacum as regards blood, the opposite is the case for milk and other substances. This difference is so marked that some authors state that benzidin has none of the fallacies which occur with guaiacum. This does not however seem to be the case.

Schlesinger and Holst,[51] writing in 1906, state that, by first boiling stools and then applying the benzidin test an easy and rapid method of examination is obtained, and one that is fine enough without giving a reaction with negligible quantities. As this boiling method has been applied lately only to the benzidin test I have described it with my account of benzidin.

A fallacy suggested in this method is that a very thorough boiling should be necessary to destroy all the oxydases. Some of the fluid in a test tube is liable to escape the necessary temperature.

B. Extraction with ether and acetic acid.

In 1893 Seifert and Müller[58] showed that while hæmoglobin is not soluble in ether, one of its compounds, acetate of hæmatin or acethæmin., is soluble. They made use of this fact to separate out blood pigments from other substances giving similar reactions.

Weber[74] applied the guaiacum test to an extract thus prepared, for as no substance which oxidises it is soluble in ether except acetate of hæmatin, an easy method of separation is thus afforded.

Working on this plan Boas and Kochmann[4] in 1902 recommended that 5 cc. of liquid stool, or the same quantity of a fluid made by breaking a solid stool up with water, be mixed with one-third its volume of glacial acetic acid; then that 5 cc. of ether be added, and the whole carefully shaken. If an emulsion forms, a few drops of alcohol are to be added to clear.

One of the colour tests is then carried out with this ethereal extract.

In some cases the presence of blood can be determined with the naked eye by the brown or brownish pink tint of the ethereal extract. But bilirubin and hydrobilirubin are taken up, and many fallacious results will occur if one depends on this method alone.

Other writers as Rossel [48] say that more satisfactory results are obtained by first drying the stools and then extracting the fat carefully with ether. Boas [5] also in 1903 recommended a similar extraction, though without a preliminary drying.

Two statements have been made by this last writer which do not receive the support of other writers, firstly, that urine mixed with the fæces may spoil the test, secondly, that alcohol used to clear the ether may give the blue or other colour of the positive reaction. Instead of alcohol a second quantity of ether may be added where an emulsion forms, and in this enough of the pigment should be taken up for the succesful carrying out of the test.

In view chiefly of the use of the guaiacum test, the blue colour of which is easily confounded with similar tints arising in the extract, Strauss[65] suggested a preliminary extraction of the urobilin by rubbing up the stools with ten volumes of alcohol; the stools are then dried on a filter. By this method fat is partly extracted. This expensive process has not been generally adopted.

Siegel [59] pointed out that unless a watery extract of the fæces be first made, the acetic acid will mix with the ether and that this mixture carries over the oxydases or ferments, which act on the guaiacum, spoiling the test. But if water added to the stools first mixes with the acetic acid, then none of the oxydases are carried over to the ether, which should be quite free from opacity and suspended material.

Schumm,[54] the whole of whose work has been based on accurate chemistry rather than on clinical rapidity, suggests the following somewhat laborious method. He rubs solid stools with 30 cc. of a mixture of alcohol and ether in equal quantities, filters this through a filter paper and pours more alcohol and ether over the residue, while softly stirring this with a rod. After the fluid has filtered off he pours on ether once or twice. In this way he gets rid of most of the soluble colouring matter, neutral fats, free fatty acids, and nearly all the water. The residue contains remnants of food, fatty acids in the form of soaps, also hæmoglobin, and the colouring matter not soluble in neutral alcoholic ether. Four cc. of glacial acetic acid is poured over this residue, which is gently stirred; as soon as the greater part of this is filtered off a further 4 cc. is added, with further stirring. This process causes the solu-

tion of the blood colouring matter and the death of the oxidising ferments. Several cc. of this filtrate are diluted with two or three volumes of ether, and to this a half volume of distilled water is added, and the whole is shaken. If the fluids do not separate alcohol is added. The ethereal upper layer is separated out, shaken with more water, and tested in a clean test tube with one of the colour reagents. If the stools or vomit are acid they should be first neutralised with soda, as otherwise the colour test may fail; if they are fluid then a larger amount of alcohol and ether are to be added. Schumm lays stress on the shaking with water to separate out any oxydases which still exist at this stage.

I have described this last method as one of the finest, though owing to the expense, both of time and reagents, it does not seem to come within the range of clinical work.

In spite of the many variations suggested, the plan of Boas and Kochmann [4] is that now generally adopted.

i. Guaiacum resin.

Guaiacum resin, which can be obtained in lumps or as a green powder, acquires a blue colour in the presence of an oxygen carrier together with blood or various other substances.

An oxygen carrier is a substance which gives up oxygen atoms easily to the oxidisable guaiacum and takes up others in place of them from oxyhæmoglobin. Turpentine and hydrogen peroxide are the best known of these. Turpentine should be old and free from resin; it should be exposed freely to the air for some days before use, but not to sunlight, for then it may give the reaction even when blood is absent. Peroxide may be dissolved in ether (the so-called oxonic ether), or it may be in watery solution; the Liquor Hydrogenii Peroxidi, which is a 3 per cent. solution, and which yields about ten times its volume of oxygen, is of suitable strength. On the whole turpentine has been more used for the guaiacum test than peroxide. It is to be noticed that in the case of pus and some other substances no carrier is needed

The chemical reaction is not known; it is a change from the so-called guaiaconic acid (guaiaconsäure) to the brilliant blue guaiacum blue or guaiaconozonid.

As suggested above, the activity of hæmoglobin depends on its

iron; this is supported by the fact that it is the hæmatin and not the globin part of the blood which gives the reaction when the molecule is broken up, and that iron itself gives a similar reaction. Boiling, as one might expect from this does not hinder the reaction, though it prevents that where oxydases are the active agent.

While it was known early in the last century that guaiacum would assume the blue colour under certain circumstances in the presence of vegetable substances, it was only in 1864 that Van Deen found that a similar colour was given with blood. The test has therefore been known by his name, as well as those of Schönbein and Almen, early writers on the subject.

Schuster seems to have been one of the earliest to use guaiacum as a test for blood in the stools, but it was not till Weber applied Seifert and Müller's method of extraction that the application became of value. He took a few cc. of the acetic acid and ether extract, and to this added 10 drops of guaiacum tincture and 20-30 drops of turpentine. He found that if blood is present a blue to violet colour appears, if not then the colour is red brown; also that the colour is brought out if chloroform be added to the solution, for it takes up the colouring matter and lies as a blue layer at the bottom of the test tube.

Many causes of error and of difficulty have arisen. None of the colour tests is so hampered by the presence of urobilin as this. Instead of a rich blue the colour may vary from green, not far different from that of the urobilin in the extract to brown. Various writers have determined on various standards for a positive result. Some say that a positive value should be assigned only to a blue and a violet; others say, with perfect reason, that a change of tint due to the presence of blood may often be recognised even if blue be not reached. In some cases the test fails unaccountably; perhaps this may depend on the proportions of various reagents, and it is by no means easy to gauge the right proportions in clinical work.

A weakness, though not such a serious one, is the rapid fading of the blue, which occurs within a few minutes of the maximum intensity being reached; it fades to a dirty brown black, and traces of blood may easily be missed.

The freshness of the guaicum tincture is an important element

in the test. For this reason it is usual to make it at the time of testing by dissolving a few grains of the resin in a few cc. or absolute alcohol. Some workers prefer to sprinkle a small amount of powdered guaiacum directly into the acetic acid and ether extract. In this way the trouble of making a tincture is saved.

Much discussion has arisen as to the necessity of neutralising gastric contents before applying the test; some say that neutralisation is necessary, others that excess of acidity, though making the reaction less fine, does so only to a small and unimportant degree.

ii. Aloin.

Aloin, the active principle of aloes, is a yellowish powder which as shown by Klunge [83] in 1882, gives on oxidation a red colour, "aloin red." This oxidation occurs under similar conditions to the oxidation of guaiacum. Nothing is known of the chemical nature of this red.

Rossel [48] in 1903 used aloin as a test for blood in the stools, and found the new method very successful. To the acetic acid and ether extract he added 20-30 drops of old turpentine, then 10-15 drops of a 1-4 per cent. alcoholic solution of Barbadoes aloin. In the presence of blood, the solution becomes bright red quickly, and after 5-10 minutes, a cherry red. Chloroform collects the red colour in the same way as it does that of guaiacum.

Boas,[5] working on similar lines, prepares his aloin tincture by taking 3 to 5 cc. of 60-70 per cent. alcohol, and adding as much aloin as lies on the point of a knife. Clemm [11] adds the aloin as a powder to the mixed turpentine and ether extract.

The relative value and fineness of the aloin and guaiacum tests has been much disputed; some writers say that aloin red is more distinctive than the blue of gaiacum, others that it is more apt to be mistaken for the brown of urobilin. Many writers refuse to accept a reaction as positive unless given by both drugs.

One certain advantage of aloin is that the colour fades less rapidly.

iii. Benzidin.

Writers: Adler,[1] Siegel,[59] Schumm and Westphal,[56] Mathieu and Roux,[35] Oettinger and Girault,[40] Schlesinger and Holst,[61] Grünwald.[20]

Benzidin or diamido-diphenyl (NH_2, C_6H_4, C_6H_4, NH_2) can be obtained in red amorphous masses or as a light powder with a reddish tint, moderately soluble in cold and still more soluble in hot rectified spirits.

The Adler's (O & R.) working to find new colour tests for blood, found that this was one of the most sensitive. They made a hot saturated alcoholic solution and filtered after cooling. They then added this together with H_2O_2 solution and acetic acid, to the fluid to be tested, and found that in the presence of even minute traces of blood, a fine green colour appears.

It was soon discovered that with Seifert and Müller's [58] method of extraction, this forms one of the finest tests for blood in the stools. Schumm and Westphal recommended that the test be done as follows: They add to a few cc. of the acetic acid and ether extract 2 cc. of fresh concentrated benzidin solution, and then some drops of glacial acetic acid, and finally 2 cc. of 3 per cent. H_2O_2.

Benzidin varies much in quality. Schumm and Westphal state that one specimen may be ten times as active as another. It is therefore essential to know the sample with which one is working. The alcoholic solution does not keep well, it is therefore advisable to make it up fresh each day.

Siegel early pointed out that while benzidin is much more sensitive to blood than other reagents, it gives either no reaction to pus and milk, or at any rate a very slight one. Schumm contradicts this and thinks that some form of preliminary preparation is essential.

Schlesinger and Holst found the old plan of boiling the stools as a preliminary step to a colour test to be quite successful in the case of benzidin. A solution is made by shaking as much benzidin as will lie on the point of a knife with 2 cc. of glacial acetic acid. A portion of the fæces, the size of a pea, is placed in a test tube which is filled about one-fifth full of water. This mixture is shaken and brought to the boil. Now into a clean test tube are placed about 12 drops of the benzidin solution and 3 cc. of 3 per cent. peroxide of hydrogen, and to this one to three drops of the fæcal solution are added. If much blood is present a blue colour appears in a few seconds, if but little then within five minutes.

If very weak the colour may be dirty grey green. In five to fifteen minutes the green or blue changes to a dirty dark violet; if negative, then no colour change occurs. The arrangement here made that the reagents are first mixed together before the solution of fæces is added, gives a control; if a blue colour appears before the solution of the stools is added, it is evident that either the test tube is not clean or that one of the reagents is impure.

The chief objection raised by writers against benzidin as a reagent is that it gives too fine a reaction, for it is said to work with traces of blood that are so minute as to be of no clinical value. Thus Schumm and Westphal say that it is too sensitive for clinical observation, though satisfactory for forensic purposes.

iv. Malachite green.

Writers: Adler,[1] Schumm and Westphal.[56]

This substance was suggested by the Adler's in the paper in which they recommend benzidin. A concentrated solution of colourless chemically pure malachite green (tetra methyldiamidotriphenylmethane) is made in glacial acetic acid. To get rid of the faint green tint which appears even in colourless preparations, an equal quantity of chloroform is added, and then water, till the chloroform is completely precipitated. The green coloured chloroform is drawn off, and any cloudiness accentuated by the precipitation of the leucobase, is dispelled by the addition of glacial acetic acid. Any remaining green tint is got rid of by further chloroform. The solution is added to an ether and acetic acid extract (made by Seifert and Müller's method), together with H_2O_2. The absence of a green colour excludes the merest trace of blood.

Probably owing to the difficulty in getting rid of the green colour from the reagent this test has not found much favour.

v. Paraphenylendiaminchlorhydrate.

Writers: Boas,[7] Schumm and Remstedt.[43]

This reagent has been suggested by Boas in one of his recent papers. He performs the test as follows: To an acetic ether extract of the gastric contents or stools made with not more than 20 drops of glacial acetic acid, a very weak solution($^1/_{200}$) of the drug is added, then 1 cc. of a $\frac{N}{2}$ alcoholic potash solution, and

10-15 drops of 3 per cent. H_2O_2. A characteristic olive green ring appears between the ether and the hydrogen peroxide. The layer on top may be violet. Where much bile or urobilin is present, it is best to extract repeatedly with alcohol and ether as a preliminary matter. If blood is absent, then a green colour comes not at all or only after standing a long time, and then not markedly. Boas says that the reagent does not lose its activity and that it gives a quick, and as far as is known at present, an accurate result.

Schumm and Westphal consider that the test depends much on the time at which the acetic acid is added, and that it is not so satisfactory as benzidin.

4. Fate of Blood in the Digestive Tract.

The controversy, which has raged now for many years, and with which the names of Schmiedeberg and Bunge are closely associated, concerning the absorption of iron, is not without interest in the consideration of blood absorption from the intestine. When it was found that nearly all the organic iron given in anæmia could be recovered from the stools and that patients with chlorosis nevertheless recovered rapidly, it was suggested that iron could be absorbed only when in organic combination. Acting on this supposition it has become fashionable to give blood derivatives in the treatment of anæmia. Thus questions arise as to what are the chemical changes which blood undergoes in the intestine, and what proportion is absorbed, whether it be taken medicinally or be shed from a carcinomatous ulcer or other raw surface.

At an early stage blood corpuscles are destroyed and hæmoglobin is broken up so that hæmatin is set free. This breaking up of the corpuscles occurs most quickly where acid is present in the stomach, for Korczynski and Jaworski showed that where acid is in excess, as in gastric ulcer, corpuscles survive but a short time, but that where it is deficient, as in cancer, they can be found for a much longer period in stomach contents withdrawn by means of a tube. The splitting of hæmoglobin to hæmatin occurs not only in the stomach but also in the intestine, for hæmatin, as shown by Boas, is found in the stools in cases of ulcer or growth of both the small and large gut.

Trembur's work helps to show the amount of absorption of blood

derivatives in the intestine. He gave patients Hommel's hæmatogen, and judged the amount absorbed by calculating the amount of iron left in the stools. He found that 60 per cent. of that taken could be recovered, and concluded that hæmatogen is one of those substances which are only slightly attacked by the digestive juices of the body, and that the iron is only to a slight extent used up. He therefore thinks that hæmoglobin, which forms the greatest part of hæmatogen, is a substance very little absorbed by the intestinal wall.

It is the general opinion that nearly all the blood which is shed into the stomach or intestine finds its way to the stools.

5. The smallest traces of blood that can be detected.

Many of the writers on occult hæmorrhage have carried out experiments to show the smallest amount that must be shed for detection by the naked eye, and by the various tests in use. The general result of these observations has been to show that a large amount may be missed macroscopically, while minute traces may be detected when careful tests are performed.

A. Each method has been tried with watery solutions.

Guaiacum.—Hartmann claims that he can detect $\frac{1}{100000}$, but other writers do not find the reaction nearly so fine as this, perhaps $\frac{1}{50000}$ may be taken as a more usually accepted standard.

Aloin.—Stands on the same footing as guaiacum.

Benzidin.—A solution of blood $\frac{1}{500000}$ gives a marked reaction, while even $\frac{1}{2500000}$ may be detected.

Of the other methods leucomalachite green has been found to give $\frac{1}{1000000}$ (Adler); Teichmann's crystals $\frac{1}{200000}$; hæmochromogen crystals $\frac{1}{50000}$ (Grünwald), and the K C N spectrum $\frac{1}{5000}$ (Grünwald).

B. In other series of experiments blood has been mixed with the stomach contents, or in stools after these have left the digestive tract. With gastric contents Boas and Kochmann found that using the guaiacum test a dilution of 1 part of blood in1200 of the contents could be detected. With stools mixed with small quantities of blood, Grünwald found that by the K C N spectrum, 1 part of blood with 40 of the stool, by guaiacum, 1 in 120, and by benzidin $\frac{1}{800}$ could be detected. Schumm by his more exact

guaiacum method claims to show $\frac{1}{1000}$, and Cowie by his method $\frac{1}{3000}$, though by the ordinary guaiacum method he can only show $\frac{1}{300}$.

C. Various writers have tested the stools after a definite amount of blood or underdone meat has been given by the mouth.

i. Blood.—Weber and Boas state that 3 cc. of blood can be detected by the guaiacum test, and this has generally been accepted. But Rossel, on the one hand, considers that even 5 cc. is usually missed, and that 10 cc. is the least likely to be detected; while Jaworski and Korolewicz say that 10 cc. may actually colour the stools, and Cowie states that by his own method 1 gram can be found with certainty.

ii. Meat.—It is stated by many workers that 3 cc. is the smallest amount likely to be found by the various tests. Others say that they cannot obtain such a fine reaction, and Cowie, who claims to detect 1 gram of blood, can only detect 20 grams of raw meat. This statement agrees more nearly than do the rest with that of Leishmann, who says that 250 grams of beef contain 5 grams of blood.

D. Korczynski and Jaworski, having given a definite amount of blood and food together, withdrew these at various intervals, and found that under ordinary circumstances blood corpuscles were broken up within five minutes of entering the stomach.

6. Comparison of value of examination of gastric contents and stools.

Two questions arise: firstly, whether the examination of stools or stomach contents is of the greater value; secondly, whether extraneous blood is more likely to appear in vomit owing to straining, or in gastric contents withdrawn by the stomach tube owing to the abrasions which this instrument causes.

Most writers while allowing that the gastric contents, even in the form of vomit, are less unpleasant than the stools to examine, consider the advantage of the latter to be so great as to outbalance any æsthetic disadvantage, for, as has been pointed out, it is not one single test, but a series of reactions which is of value in a case; but vomit is only to be obtained in a few cases, while the freqent use of the stomach tube is resented by the patient in

England at any rate. It is true that blood which occurs in gastric contents must come from the upper part of the digestive tract, while that in the stools may be derived from any portion of it; and in this respect the examination of both materials in the same case might be advantageous; but the course of the clinical symptoms usually decides whether a lesion is in the stomach or lower down, though it will not decide whether there is malignancy or not. The advantage of this double examination is therefore apparent rather than real.

Apart from the question of easy manipulation, both the gastric contents and the vomit have each been recommended on the plea of lesser fallacy. Boas and Kochmann tested the food withdrawn after an Ewald's test breakfast, but admit that pieces of mucous membrane may be freed and that bleeding may ensue. Hartmann found blood in the stools of patients after the passage of the stomach tube, though not before.

Stools have been used in the examinations made by most recent workers, both as being more available and less fallacious.

7. Fallacies.

To determine the value of these tests it has been necessary to investigate closely any possible fallacies that might give erroneous results. This has been done exhaustively by numerous writers. Suggested fallacies may be taken under two headings—A. Those due to foreign bodies which give similar reactions of colour or otherwise. B. Those due to extraneous blood.

A. It is so well recognised that other substances besides blood (*vide* page 292) give the colour tests that one can rule out any colour test for which there is not some preliminary preparation. But even if we accept the acetic ether method of extraction or the boiling method we still have some points to consider.

The condition of the reagents is important. Guaiacum, if old or in too strong a tincture, may fail, and turpentine, if not thoroughly ozonised, may not act on the colour reagent.

Hartmann [21] warns us that if the thumb be used to stopper the test tube at any stage the sweat on it may give a colour reaction. The smell of the acetic acid and ether mixture is enough to make

this procedure unpopular, but the necessity of clean test tubes is emphasised by this possible error.

Siegel and Schumm raise a point of great importance, for they show that water must be added to the substance which is to be tested, otherwise glacial acetic acid may carry over oxydases to the ether, with which it is miscible, whereas if water be present this does not occur. Schumm adds that the ether extract must be absolutely clear and not turbid. Clearing of the ether may be carried out by filtration or by shaking it several times with water, which takes up the oxydising ferments. Siegel also found that if blood in a weak watery solution be exposed to air for over 48 hours it will not give the guaiacum reaction.

Rossel [48] is uncertain about the possibility of large quantities of iron causing a reaction, but most writers consider that Weber's procedure, carefully carried out, guards against fallacy in this respect. If boiling be used as a preliminary step, then iron must be absent both from food and medicine.

B. Blood from extraneous sources.

There are two ways in which blood may be a source of error. It may be derived (i.) from blood-holding food, or it may come (ii.) from parts of the body other than the alimentary canal. Under this last heading one may include blood from hæmorrhoids, which will lie on the surface of the stool, or from a slight abrasion of the pharynx, in which case it may appear in the vomit or mixed up in the stools.

i. Food which contains blood has afforded one of the greatest controversies which has arisen in respect to these tests. Can well-done meat be taken without giving a reaction in the stools? Weber in 1903 said the taking of well-cooked meat caused no reaction, but "das nach englischer Art gebratene Fleisch" was to be avoided. Boas and Rossel and many others agree with this; Joachim says that even 600 grams (that, is, a pound and a half) of well-cooked meat gives no reaction. But Schmilinsky and Hartmann show that after the taking of even small amounts of well-cooked meat the reaction appears. Siegel and Fallois share this opinion. Schlesinger and Holst find that Schumm's method in many cases gives positive results after a diet of well-cooked meat, while the less sensitive Weber's method is negative.

Probably Mathieu and Roux are correct in saying that this discrepancy of opinion depends on the different times taken by the food passing through the intestine. For it is certain, as I show later, that even well-cooked meat gives a distinct reaction when tested directly, and it seems reasonable to suppose that if hurried through the intestine some of this blood at any rate will not be broken up. The view of Cowie that as much as 10 grams of raw meat may not be detected in the stools differs widely from the above views.

ii. The following sources of extranous hæmorrhage, or hæmorrhage not arising from the gastro-intestinal tract, have been suggested:—(*a*) Mouth, especially from the gums, as in scurvy and hæmophilia; (*b*) Nose, from some of the various causes of epistaxis; (*c*) Pharynx and œsophagus, from varices or growths; (*d*) Lungs in phthisis and pneumonia; (*e*) Piles and menstrual blood; blood from these last may be too scanty to be seen with the naked eye, but nevertheless may give a positive colour reaction.

The only way to avoid these fallacies is to neglect stools where any of the above conditions are likely to exist. Joachim, as the result of examining stools of patients with pneumonia and phthisis, says that blood is rarely present in either of these two conditions.

8. Results of tests done in health.

There is a marked unanimity of writers who have worked with Weber's and similar reactions that no blood is found in the stools of healthy people. Hartmann tested 135 normal people on flesh-free diet and found no blood in the stools. Joachim examined all his patients for a time, and in those where there was no suspicion of digestive disease his results were all negative. Forty patients tested by Mathieu and Roux all gave negative results.

9. Results obtained in gastro-intestinal disease by various workers.

The application of these tests to clinical medicine is a field of work in which Boas is pre-eminent. The views of most writers coincide with those formulated by him.

(To be continued.)

CHRONICLE.

Medicine.

CORNER (L. A.) **Acute Dilatation of the Stomach and its relation to mesenteric obstruction of the duodenum.** *Amer. Journ. Med. Sci.*, 1907. Vol. xxxiii., p. 345.

AFTER describing a case where this disease developed after admission to hospital in a patient with miliary tuberculosis and in which the most noticeable feature was the rapidly fatal result within three hours of the onset, the writer analyses 102 cases already reported by other writers.

Ætiology. Forty-two per cent. of cases occur after operations with general anæsthesia; but in none of those reported was the operation on the stomach and in a few only was it abdominal. Wasting diseases, spine injury or deformity, indiscretions of diet, all occur with sufficient frequency to suggest some causative relation.

Symptoms. Vomiting of sudden onset, persistent, large in amount, bile-stained, but not fæculent, is present in nearly all cases. Distension occurs, usually most marked in the epigastrium and to the left of the umbilicus. Splashing sounds can be obtained. Pain is frequently absent. The temperature is typically normal or sub-normal. The absence of peristaltic waves is worthy of note.

Prognosis. Seventy-two per cent. of the recorded cases died; but probably many mild cases which recover pass unrecognised.

Morbid anatomy. The stomach is of great size. In most cases part of the duodenum is also distended. The dilatation frequently stops abruptly at the point where the root of the mesentery with the superior mesenteric artery crosses the duodenum. In a few cases the dilatation stops at other points.

Pathology. Three suggestions have been made—(1) that the dilatation is due to paralysis of the vagus; (2) that gastrorrhœa or increased activity of the secretory glands causes the distension; (3) that obstruction from some cause or other is the primary cause. If this is correct then the pressure by the mesenteric artery is the cause of the distension and not the result of it as some people suggest. The following are likely to cause the pressure: (*a*) a mesentery long enough to allow the gut to fall into the pelvis, but not long enough to allow it to rest on the pelvic floor; (*b*) a heavy state of the gut such as will occur when it contains no gas; (*c*) dorsal decubitus.

Diagnosis is mainly from peritonitis following perforation and from intestinal obstruction.

Treatment. Operation seems of little use. The prone position may save the patient by relieving the mesenteric pressure.

E. B. LEECH.

FELLANDER (J.) **A case of Elephantiasis Endometrii Fibrosarcomatosa Gigantocellularis.** *Hygiea*, 1907, p. 479.

THE patient, aged 48, had a bright red polypous cauliflower growth projecting through the cervix uteri, and other polypi could be felt higher up in the cervix. Total extirpation of the uterus and adnexa was performed per vaginam; stout adhesions were observed round the uterus and tubes, and hydrosalpinx was found. The patient did well after the operation, and seven years later reported herself as very well.

The uterus was 13 cm. long, and the ovaries were a little enlarged; both tubes were dilated. The cervix was 4 cm. long and dilated; the uterine muscle was 2 cm. thick, and much of its endometrium was converted into a swollen polypous mass; one polypus was 8 cm. long. The endometrium on the left side showed a diffuse thickening up to $\frac{3}{4}$ cm. The limit between endometrium and muscle was everywhere sharply marked. The new growth was mostly soft and yellow, in places œdematous or infiltrated with blood. Under the microscope it appeared to have, in places, an epithelial covering of flattened cells with large bladder-like nuclei; and a few glands, similar to those of the uterine mucosa, running perpendicularly inwards. The bulk of the new growth was composed of complex larger and smaller strands of connective tissue running in every direction, and separating from one another masses of sarcoma-cells. Elastic fibres were almost entirely lacking. In the external parts these sarcomatous cells were small, round or oval, with little cellular protoplasm and deeply staining round or oval nuclei. In a few cases the nuclei were large, and angular or lobulated. The finer connective-tissue fibres formed a close network separating the individual sarcoma-cells from one another. In the deeper portions of the new growth these cells were larger and more polymorphic; their nuclei were more lobulated and irregular, and often showed either normal or multipolar mitotic figures. From 50 to 100 giant cells might be seen in a single field, up to 55 μ in diameter; some of these cells having much protoplasm and a single more or less central rounded lobulated nucleus, other showing less protoplasm, and either a single lobulated nucleus or from four to eight smaller separate nuclei closely set together; very little vacuolization or suggestion of degeneration was seen in the giant cells. In the polypous growth already mentioned was a cyst the size of a hazel nut; it was lined with a single layer of flattened epithelium free from glandular depressions, overlying a connective-tissue network filled in with larger and smaller sarcoma cells and poor in vessels. The outer part of the polypus was covered with small papillary excrescences, mostly covered with flat epithelium.

In other places the uterine mucosa showed marked chronic interstitial endometritis; the uterine muscle was nowhere invaded by giant cells, but exhibited an excess of connective-tissue. The adnexa similarly showed chronic inflammatory changes.

Felländer has collected and discusses numerous cases of giant-celled sarcoma arising from the endometrium. He thinks that in his own case the morbid process originated in the deeper layers of the uterine

mucosa, for here the giant cells were largest. Nothing resembling epithelioma was found in his sections, nor were any decidual cells or evidences of syncytia suggesting subinvolution. All the transitional stages between connective-tissue and the giant cells could be met with, the latter appearing most in the parts poorer in cellular elements. Felländer remarks that the nuclei of the giant cells were produced amitotically in his case, by direct fragmentation as a rule, but not always; these cells are not to be taken as evidence of a regressive metamorphosis, nor was any evidence obtained indicating that they were produced by the irritation of foreign bodies (*e.g.*, blood-pigment). A bibliography of the subject is appended.

A. J. Jex-Blake.

Magnus (V.) **A case of Syringomyelia.** *Norsk Mag. for Laegevidenskaben*, 1907, p. 659.

The patient, an otherwise healthy man of 27, had complained for several years of stabbing and burning pains in the right arm and shoulder, and of jumpings in the arm. On examination, he exhibited complete analgesia to pricking and faradism, and loss of the sense of temperature (water at 50°C. and pieces of ice were used) over the whole right arm and shoulder, the right side of the neck, and the back of the head on the right side. Tactile sensibility over these parts was preserved; the right hand also had its stereognostic sense, sense of position and localisation, joint sensation, and periosteal sensation. The patient had never observed these peculiarities until they were brought to his notice. The knee-jerks were both increased, and ankle clonus was present on both sides. No trophic or secretory anomalies were found.

Magnus diagnosed syringo-myelia in this case, although no muscular wasting was present, supposing that the gliosis in the cord had not affected the anterior cornua. Leprosy, hæmato-myelia, cervical spondylitis, brachial plexus neuritis, and hysteria were considered in making the diagnosis, and were rejected. Analgesia of the posterior three-quarters or so of the right ear (a diagram is given) was noticed, corresponding to the distribution here of the second cervical nerve; the hollow of the ear and external meatus presented normal sensibility, being innervated by the nervus auricularis vagi.

A. J. Jex-Blake.

Bittorf (A.) and Jochmann (G.) **Sodium Chloride Metabolism.** *Deutsches Arch. f. klin. Med.*, 1907, 89, p. 485.

The authors are of the opinion that an undue amount of importance is often attached to the NaCl-metabolism in various morbid processes, particularly in renal disease. They have therefore investigated the excretion of NaCl and its relation to œdema and to the input of NaCl in a variety of patients with renal, cardiac, or some acute inflammatory

disorder. The patients were mostly on a fluid diet; common salt was added thereto on occasion, and the excretion of the salt and the amount of it in œdema-fluid or exudate (if any were obtainable) were determined before and after such additions.

The authors found that the marked retention of NaCl during the course of lobar pneumonia depended upon an increased tendency of the tissues and of the pneumonic exudate to retain NaCl; the excretion of common salt could not be immediately augmented by giving large doses (15 grammes) of NaCl; there was no simultaneous retention of water in the tissues. In acute pleurisy, NaCl was excreted normally, and the administration of NaCl acted diuretically—the salt was not retained. In cardiac disease the excretion of water and common salt depends upon the circulation only; œdema, if present, was not increased by giving salt, and the salt given seemed to increase the elimination of water and of chlorine. More NaCl was often found in non-nephritic than in nephritic exudate. The percentage and the total quantity of NaCl excreted by the kidneys in renal congestion were high; renal cases with cardiac insufficiency excrete NaCl as cardiac cases do. In general, renal cases excrete their chlorides well, and often independently of their excretion of water. In acute nephritis with œdema, addition of salt to the diet increased the elimination of NaCl and of water; soon afterwards the same patients exhibited NaCl-retention with good water excretion and without œdema. In chronic parenchymatous nephritis NaCl acted as a diuretic and increased the urinary chlorides; these patients generally eliminated NaCl well and only occasionally slowly. In chronic interstitial nephritis common salt was similarly well excreted for the most part; exceptionally, water or both water and chlorides were eliminated slowly.

Hence no conclusions as to the gravity or nature of the renal disease can be drawn from the excretion of chlorides. The authors hold that their results speak strongly against the assumption that primary NaCl retention is the cause of œdema, and that it is vascular changes probably that bring it about. They have not seen any harmful effects follow the administration of NaCl to their various patients. The modern ideas about salt-free diets are misleading or erroneous in so far as they are based upon an alleged inability of the kidneys to excrete NaCl. But if a salt-free diet be one rich in fat and carbohydrates and poor in proteid and stimulating substances that lessen the input of water, then they welcome it as an old friend with a new name.

A. J. Jex-Blake.

Scheel (O.) **Two cases of Congenital Heart Disease.** *Norsk Mag. f. Laegevidenskaben*, 1907, p. 372.

The first case was that of a woman who from childhood had suffered from shortness of breath on excretion, winter bronchitis, and an increasing tendency to cyanosis. The cardiac dulness was increased, and reached upwards to the second left costal cartilage. Over the whole

cardiac area, and loudest at the base, could be heard a loud systolic murmur passing straight on into diastole; the pulmonary second sound was much accentuated. No venous pulsation or dilated veins were noted. The patient died of pneumonia, aged 28; the foramen ovale and interventricular septum were closed, the valves were normal, and the ductus Botalli, 1 cm. long, was patent, admitting a little finger. The pulmonary artery was arterio-sclerotic and much dilated, measuring from 10 to 14 cm. in circumference, in place of the normal 7 cm. The right auricle and ventricle were both smaller and thinner-walled than normal. Scheel argues that blood must have flowed during diastole from the aorta into the pulmonary artery, and during systole from the pulmonary artery into the aorta, because the aorta was only 4·7 cm. instead of the normal 5·9 cm. in circumference 1 cm. above the valves, but was normal in circumference (4·6 cm.) after it had been joined by the ductus Botalli.

In the second case, that of a child dying with melæna and hæmatemesis at the age of four weeks, the heart sounds were normal during life. At the obduction it was found that the aorta arose from the right ventricle, the pulmonary artery from the left. The heart was enlarged, mainly by hypertrophy of the right ventricle, the capacity of which appeared to be about twice that of the left ventricle. The valves were normal; the foramen ovale and the ductus Botalli were both patent. An embolus was found in the superior mesenteric artery, and infarcts were seen in the right kidney, spleen and ileum, but the source of the emboli was not discovered. Scheel thinks that both the aorta and the pulmonary artery were a little dilated.

A. J. Jex-Blake.

Tanaka (I.) **A case of Paralysis of Hypoglossal Nerves caused by dental abscess.** *The Sei-I-Kwai Medical Journal*, March 31, 1907.

The patient was a farmer, aged 51, of good family and personal history. Three years previously he had suffered from left trigeminal neuralgia. In March, 1906, he developed an alveolar abscess in the left upper jaw, recovery from which left him with increasing difficulty in articulation, so that in May his speech became quite unintelligible. He was admitted into hospital in September. The tongue was imperfectly protruded and deviated to the *right;* when retracted it seemed to lie more posteriorly than usual and to be higher on the left than the right side. Lateral movement towards the left was abolished. On palpation the right side felt softer than the left, but there was no obvious atrophic change; passive movement was not resisted. Tactile, pain and temperature sensation were not affected on either side, nor was there any defect in taste. Articulation was indistinct, and the letters s, d, l, e, i, etc., were badly enunciated. The left side of the tongue showed partial reaction of degeneration. The right arch of the palate was somewhat lower than the left, but no other motor, sensory or reflex abnormality was discovered, and there was no difficulty in mastication or deglutition. Slight anæsthesia remained in the left parietal and temporal regions

from the previous attack of trigeminal neuralgia. The fundus oculi was normal, and no nervous defect could be discovered in any other part of the body. Two enlarged glands were felt at the angle of the right upper jaw and in the right submaxillary region. In discussing the diagnosis the writer rejects nuclear disease—whether primary, or as part of a bulbar paralysis or tabes dorsalis—and considers that the paralysis was due to a peripheral neuritis, consequent on the alveolar abscess. The deviation of the tongue away from the paralysed side has been observed in other recorded cases, and is considered to be due to incomplete involvement of the lingual muscles. Dr. Tanaka quotes five cases of primary hypoglossal neuritis from medical literature. In three the weakness was preceded by definite attacks of pharyngitis; in one some pain on swallowing had been experienced; but in the last there was only a doubtful history of diphtheria four years before the onset of paralysis.

J. W. Russell.

Rotch and Murphy. **Gastro-enteric Obstruction in early infancy.** *Boston Med. and Surg. Journ.*, 1907, Nos. 19 and 20.

This is a discussion of the general diagnosis and treatment with reports of two cases of pyloric stenosis and one of volvulus successfully treated by laparotomy. No previous case of volvulus in the first year had been published in which a provisional diagnosis of such had been made during life, followed by operation with complete recovery.

Excluding rare malformations, symptoms of obstruction arise in four classes of case—(1) stenosis of the pylorus, cardia or intestine, the two latter being rare; (2) intussusception; (3) volvulus and (4) appendicitis. Pyloric stenosis shows itself in the early days or weeks, volvulus is variable, intussusception is rare under three months, and appendicitis practically unknown under two years. Vomiting, though present at some time in all forms, is not primarily diagnostic of obstruction, and by far the commonest cause in the early weeks is indigestion. The first thing to be excluded therefore is indigestion, then stenosis and volvulus. All the symptoms except hæmorrhage and palpable tumour may be caused by indigestion, even gastric peristalsis. A palpable mesenteric gland may simulate pyloric tumour, while in many cases of stenosis the tumour cannot be detected under ether. Stenosis may be organic or spasmodic, and each of these again complete or partial. When partial the obstruction will vary in degree, and the actual stenosis is probably almost always increased by spasm from various causes, especially hyperacidity. A partial stenosis may persist for years, but usually with symptoms of chronic gastro-enteric indigestion, wasting and ill-health.

The etiology is unknown. The majority show symptoms in the third week, and first attacks after the second month are rare. Vomiting is the leading symptom, and is expulsive in character, its frequency depending on the amount of food taken. Expulsive vomiting may

occur in indigestion with hyperacidity and pyloric spasm, but here some dietary cause can be discovered, and the condition is amenable to treatment. Nausea is absent. If the degree of stenosis is varied by spasm the symptoms vary accordingly, and bile may be present in the vomit. Gastric peristalsis is of secondary importance, and is generally not seen. Pyloric tumour if present is diagnostic, but may be obscured by a large liver, etc, or only palpable in contraction. Dilatation is the rule, but the sharply outlined fulness after ingestion of a small amount of food is of greater significance than the actual size. Constipation is the rule, the dejecta are scanty, dark and pasty, resembling meconium. Tetany occurred in one case, but is unusual. Bile is rarely present in the vomit in pyloric stenosis, but is to be expected in volvulus. Diagnosis is rendered difficult where the child has been improperly fed from birth. Radiography after administration of bismuth may prove useful.

Having eliminated gastro-enteric indigestion, the diagnosis remains with obstruction, and the indication is for laparotomy whatever the cause. Before deciding upon operation, however, a fair chance should be given to exclude simple spasm—lavage, rectal feeding, analysis of the breast-milk. Vomiting may cease after 24 hours' rest to the stomach; if after this a good breast milk or a carefully modified milk of 10 per cent. alkalinity is given, and, when the stomach is full, expulsively vomited, mechanical obstruction may be strongly suspected. In two hours try a little whey, and if vomited give alkalies—sodæ bicarb. and lime water. If no improvement follows operation should be undertaken without delay.

Volvulus is not common in infancy. It is probably due to developmental anomaly—median attachment of a long mesentery with the cæcum high up under the liver. Symptoms vary according to location and degree of torsion. The signs are those of obstruction, differentiation being inessential. The symptoms may be intermittent. Local meteorism may be absent. Melæna is less important than in intussusception. Continuance of normal fæcal movements for several days in cases of high obstruction is misleading. Treatment is essentially surgical. In both conditions preparation for operation should include fortification by enemata, brandy, strychnine, or pectoral saline infusions. Ether is the anæsthetic of choice, but over-etherisation is highly dangerous. Under proper conditions an operation of thirty minutes is well borne and usually ample. For pyloric stenosis posterior gastro-enterostomy is preferable to pyloroplasty. The amount of jejunum taken up should be as small as consistent with sound suture, the transverse meso-colon should be caught up on either side and the jejunum itself sutured to the stomach beyond the anastomosis.

After operation exact and careful feeding is imperative, and in no condition is percentage feeding more absolutely indicated than throughout the management of these cases. Feeding should not be resumed under 24 hours.

In volvulus simple untwisting is not likely to be followed by recurrence. More extensive procedures are not well borne. The outlook for volvulus cases is bad. The surgical statistics of pyloric cases show

that in 60 cases operated on 53·5 per cent. were saved. These represent the results of twenty-eight different operations and many different procedures, and since they are the results of the developmental period they are most hopeful. They are too recent for ultimate results to be accessible. One case of posterior gastro-enterostomy was perfectly well at the end of two years, and Dent had successful results from pyloroplasty four, three and two years after operation.

G. R. Mill.

Perutz (F.) **Abdominal Arteriosclerosis and allied conditions.** *Münch. Med. Woch.*, 1907, Nos. 22 and 23.

The writer details the clinical features, diagnosis and treatment of the somewhat obscure and complex conditions included under this head. The various views regarding the mechanism of production of the pain in these cases are noticed, and the pathogenesis discussed in the light of recent researches, especially those of Buch and Pal. His own clinical observations were made upon twelve cases.

These conditions are still little known. Three groups of cases may be recognised:—

1. Cases in which the attacks resemble true angina (the "angina abdominis" of Bacelli). A postman, æt. 38, had for some time almost daily paroxysmal pains in the stomach region, with sense of constriction in chest and anguish. He experienced violent pulsation in the abdomen. The pain radiated into the left arm, also often into the leg. Going upstairs especially provoked the attack. Also nocturnal pains. During the attack there was urgent desire to go to stool, and sometimes evacuation of the bowels. No alcoholism or syphilis. He was pale, prematurely aged, with sclerosis of the radial and temporal arteries. Heart not enlarged; 1st sound soft, 2nd pulm. markedly accentuated. Pulse regular; blood-pressure 100. Pressure below and to the left of the umbilicus was very painful. Urine contained some sugar. The attacks improved under diuretin, and he was wet-cupped on four occasions. The pressure in the abdomen subsided, sleep was better, and the bowels acted regularly. Some days later he had a severe attack, after which tingling remained in the left arm. Under small doses of iodide his condition improved, and he resumed work. Most of his cases belong to this group. The picture resembles true angina. Usually the attacks have no relation to food, but are excited by bodily exertion. In others the pain comes on after a copious meal or distending articles of diet. Vomiting often follows. The bowels may remain regular or there may be constipation and irregularity, while in two cases there was desire to go to stool during the attack.

2. The second group is distinguished by a lesser intensity. The pain is more limited to the epigastrium (the arterio-sclerotic bellyache of Buch). The pains radiate to the back and upwards to the sternum, but distinct involvement of the vascular system, dyspnœa, and anguish are absent. Pain is described as boring or burning or as a pressure.

The case described was that of a heavy cigarette smoker. The radial and temporal arteries were sclerosed and the heart was normal. There was tenderness over the abdominal aorta. He improved after giving up tobacco, the pains were lessened by diuretin, and he remained well except for slight attacks quickly dissipated by iodide.

Between these two degrees there are manifold transitions, and severe anginal attacks may occur between slighter attacks of episgastric pain.

3. In the third group bowel symptoms prevail, painful cramps, inhibition of intestinal movement, meteorism. To this belong those referred to by Schnitzler as " intermittent dysperistalsis."

Of the writer's twelve cases, 6 had enlargement of the heart and in some cases bruits, in 3 the Röntgen examination showed aneurysmal dilatation of the thoracic aorta. In 5 cases the radials and temporals were markedly diseased. The aortic 2nd was often accentuated. In several there was marked visible pulsation of the abdominal aorta. With the exception of two cases there was intense pain on deep pressure in the middle line of the epigastrium and down even to the bifurcation; pain was felt whether pressure was made over the aorta itself or over the adjacent parts of the vertebral column, and resembled in character the spontaneous attacks in radiating upwards and causing oppression. Once there was albuminuria with hyaline casts, and twice a trace of sugar. The age ranged from 30 to 60 and over; three were women. As regards etiology, arterio-sclerosis was an important factor, though he has no post-mortem evidence to offer. In two there was a history of syphilis, and one of these had had repeated lead-poisoning; in one considerable abuse of alcohol. In the three with aneuryism one had had articular rheumatism, the other two were of obscure origin. In one case there was contracted kidney.

As to the cause and place of origin of the pain there is much dispute, and the question is still open. The attacks are most probably due to spasm of the small vessels of the intestine accompanied by a rise in the blood-pressure. As regards the actual pathogenesis, Buch's exhaustive researches upon the rôle of the sympathetic lead him to refer the disturbances in question to a neuralgia of the sympathetic cords and mesenteric plexuses. The sympathetic, which normally is not accessible to painful stimulation, becomes so under certain conditions—unusually strong stimuli, inflammation, hyperæmia. A chronic excitation may thus be kept up by an extension of the periarteritis to the nervous tissues adjoining the aorta, also by an arterio-sclerosis of the vasa nervorum, aided perhaps by a fluxion hyperæmia resulting from the diminished flow in the splanchnic vessels. During the attack the stasis of the blood-stream is considerably increased, as evidenced in some cases by an increased pulsation and palpable broadening of the aorta; the increased hyperæmia of the gangliated cords conditions the attack of pain with its radiations. The sympathetic is thus the seat of origin of the pain, the aorta being sensitive only in so far as it is the bearer of the cœliac and other plexuses. The vascular spasms themselves are conditioned by an increased excitability of the vessel walls from poisons such as lead, caffein, and autogenetic poisons as in uræmia or stagna-

tion of the intestinal contents. Some part may also be played by a hypersecretion of the vaso-constrictor principle of the supra-renal gland.

Anatomical changes, however, are not essential, functional, vaso-motor disturbances may alone be present, and further between these two classes there is no sharp line of distinction. These functional cases are in fact seen to recover when the cause is removed.

As to diagnosis, stress is laid upon the abdominal tenderness described, and especially upon radiating pain elicited on pressure. A probable diagnosis may be confirmed by the results of treatment. Sometimes it is impossible. It may be difficult when the pain is related to meals, and especially where hæmorrhage occurs. Gastric ulceration may indeed result from arterio-sclerosis, complicating the picture still further. Intestinal stenosis and perityphilitis may be simulated. The writer believes that in certain cases of obstinate spastic and atonic affections of the intestine in young persons neuro-vascular disturbances in the splanchnic region play an important part. These subjects are at least often endowed with an abnormally irritable neuro-vascular apparatus.

Treatment. Diuretin seems to be almost a specific, and the prompt effect of its administration may aid diagnosis in obscure cases. Agurin and theocin (also theobrom derivatives) have a similar action. Buch has had striking effects with strophanthus. Iodides and nitrites are also useful. Morphine if required in the attacks is best combined with atropine.

Physical and dietetic measures are important. Carbonic acid and other baths have a beneficial effect on the heart and circulation. The diet should incline to vegetarianism. Massage and electrical treatment can do much, especially for distension and flatulence. Abdominal massage is highly recommended by Buch and Huchard.

G. R. Mill.

Hayem (G.) **A case of Symptomatic Anæmia of extreme degree.** *Gaz. des Hôpit.*, May 28, 1907.

The author gives a detailed account of a case of cancer of the stomach where anæmia was so intense as to be of the pernicious type. The blood count showed 488,250 red cells, 8,060 white cells and a hæmoglobin index a little less than one. Several nucleated red cells were found, whilst the hæmatoblasts (blood platelets) were scanty. The author classifies cases of pernicious anæmia under the two headings of symptomatic and idiopathic. One of the more characteristic differential points is—that in the idiopathic forms the red cells rapidly decrease in number and are frequently less than a million, whilst in the symptomatic form cases where diminution takes place to the extent of a count of less than a million are rare. Further points of difference are that in the idiopathic form the hæmatoblasts are markedly decreased, and in consequence the clot does not retract, the small forms of the red cells

disappear, the hæmoglobin index is less than one, and numbers of nucleated red cells, especially megaloblasts, appear. In the symptomatic form of pernicious anæmia the reverse holds good as a general rule. Hayem lays stress on the diminution of the hæmatoblasts in pernicious anæmia of the idiopathic type. He believes that this form of anæmia is due to failure of the process whereby the red blood cells are formed from the hæmatoblasts, and the presence of nucleated red cells and myelocytes is explained by an increased activity of the bone marrow which takes place in an attempt—unfortunately always unsuccessful—to compensate for the failure of the normal process. Some cases of symptomatic pernicious anæmia are, he believes, indistinguishable from the idiopathic form except in the presence of a causal factor, and such cases, he explains, are due to a failure of blood formation. The anæmia becomes so profound that the process whereby red cells are formed from hæmatoblasts fails. The explanation of the exact means in which the anæmia is caused is a matter of doubt. It is not an anæmia from hæmorrhage. Extreme anæmia may also occur in gastric ulcer quite apart from severe hæmorrhage.

The recognition of the fact that extreme anæmia may be merely symptomatic of gastric carcinoma is important because these cases frequently do not complain of marked vomiting, and the presence of a tumour mass is rare except late in the disease. Careful enquiries ought to be made in such cases as to the presence of dyspeptic symptoms, and all methods of investigation, such as test meals, should be employed. Such procedures will, in many cases, enable operation to be successfully performed.

E. N. Cunliffe.

Kieffer (C. F.) **Malignant Disease and Malaria, with reference to their supposed antagonism.** *Medical Record*, April 27th, 1907.

The author concludes that there is no real antagonism between malaria and malignant disease. Far from this, it is the indirect cause of the large proportion of malignant disease of the liver found in, *e.g.*, the South Sea Islands. Malarial infection supervening on malignant disease does not modify the latter. Natives of tropical countries enjoy a relative immunity to malignant disease, which, however, varies within wide limits. Amongst the cases of malignant disease in the Phillippine Islands there is an unusually large proportion of cases of epithelioma of the penis. The relative immunity of tropical natives to cancer is materially diminished by the progress of civilisation with the adoption of the ways of the white man.

Frank E. Tylecote.

Rogers (L.) **The early diagnosis and cure of the presuppurative stage of Amœbic Hepatitis.** *Practitioner*, June, 1907.

Tropical abscess of the liver is often preceded by weeks or months of fever which is often ascribed to, and treated as, malaria. Even when marked symptoms of acute hepatitis occur it is often impossible to say

without operation whether pus is or is not present. In acute hepatitis a marked leucocytosis is an indication that suppuration has already taken place, while the slighter degree may be present without actual suppuration, and the condition may in this stage be cured and suppuration prevented by the administration of large doses of ipecacuanha. In the leucocytosis which is found the proportion of polynuclears is normal or only very slightly in excess. The pyrexia—of chronic intermittent type—was found to readily yield to doses of 20 grs. of ipecacuanha night and morning, taken twenty minutes after a dose of tincture of opium. The cases fall into three groups—(*a*) acute hepatitis with dysentery; (*b*) acute hepatitis without dysentery; (*c*) cases of chronic intermittent pyrexia without either dysentery or liver symptoms, but with the type of leucocytosis above mentioned. In the last group the liver condition at this time does not given rise to symptoms, while the dysentery is latent, probably owing to the ulcers being limited to the cæcum and ascending colon.

FRANK E. TYLECOTE.

FRIESNER (I.) **Unrecognised Diphtheria.** *New York Med. Journ.*, May 11th, 1907.

THIS is a by no means uncommon form, which is often overlooked. For this reason it is a variety of special danger to the patient as well as to those in contact with him. Frequently the constitutional disturbance is practically nil. The writer dissents from Fischer's statement that the gland of the neck, and especially the posterior cervical chain, are usually enlarged. He recommends careful examination of the nose in all cases of "cold in the head," and the taking of a culture in suspicious cases. Where the discharge is unilateral or where it persists the possibility of diphtherial infection must be specially borne in mind.

FRANK E. TYLECOTE.

NORDMANN (C.) **Pleurisies in Typhoid Fever.** *Gazette des Hôpitaux*, May 18th, 1907.

THIS paper does not add much to that by Nordmann and Billet, which was abstracted in our April number. Pleuro-typhoid is a rare and usually a mild condition; pleurisies complicating the early stages of typhoid are rarely serious, while the later ones almost always turn out to be tuberculous. The affection is more commonly left-sided. A hæmorrhagic effusion is often found. The paper closes with a full bibliography.

FRANK E. TYLECOTE.

PLANCHU et RICHARD. **Goitre in the New-born.** *Gaz. des Hôpitaux*, 1907. No. 54.

THE writers outline the history of the subject since Nicod d'Arbent, of Lyons, first drew attention to the condition in 1840. The literature is scanty, and in France itself, in spite of the early observations published

by d'Arbent and others, it is only in the last few years that the subject has received any attention, and that only in two centres of mountainous districts, Lyons and Toulouse. Audebert, of Toulouse, exhibited two cases of congenital goitre, and Pollosson, of Lyons, performed the first successful exothyropexy in the new-born infant. Recently another successful case was published in Cadet's thesis.

The tumour varies in size from a small nut to an adult fist. It is oftenest in the form of a crescent embracing the front of the neck, but may appear as two pyramids with apex upwards and backwards. Usually one lobe is larger, especially in cystic cases, but generally both are markedly hypertrophied. It may form a complete ring round the trachea. There are three chief forms—vascular, parenchymatous and cystic—but the second and third are rare. The vascular form is characterised by enormous development of extra- and intra-glandular vessels, especially of the veins which may resemble the sinuses of the dura mater. In one case the inferior thyroid was larger than the internal carotid and seemed to be the continuation of the common trunk. There is sometimes also an intense vascular flux in the surrounding tissues enveloping the tumour in a sort of flabby matrix. In the character of the alveoli and in the vascularity there is a resemblance to exophthalmic goitre. The structure of the parenchymatous form as far as observed resembles that of the normal gland at birth. Stenosis and displacement of the trachea are common, and stenosis is most marked in the annular form. The flattening is generally antero-posterior. The œsophagus may be compressed in annular cases. Large vessels and nerves are often displaced with congestion of vessels and organs, hence probably the congestion of the thymus which sometimes accompanies it.

The etiology is obscure. According to statistics compiled by Richard, in 22 cases the mother had a goitre, in one the father, in one both parents. The data are insufficient for any statement as to frequency. Probably many cases of rapid death following birth have been due to a small retro-sternal goitre unsuspected. Of 642 cases collected by Damme (1862—1875), 37 were in the new-born, 59 from two to twelve months, 35 from two to four years. The writers are inclined to suggest that the great majority of the goitres occurring in children date from birth, and even that the majority of all goitres are congenital, passing unnoticed at birth to take on later a rapid development from various causes, telluric or congestive (*e.g.*, puberty, pregnancy).

As to the pathogenesis, various hypothesis are discussed. In the vascular form they think the microscopic appearances suggest a relationship to the angiomata. In the case of the parenchymatous form, they feel compelled to fall back upon the causes generally invoked to explain goitre in the adult—magnesium, iron, etc., in the drinking water of the mother, reacting on the thyroid of the fœtus by a toxic agent secreted by that of the mother or not neutralised by her internal secretion.

The symptoms are physical and functional. The tumour is variable;

it may be latent, lying behind the sternum or on the postero-lateral aspects of the trachea, where it has to be sought by careful palpation. Oftener it is manifest. In the congestive form the tumour moves very slightly with deglutition since its large mass limits the excursion of the larynx. Sometimes there is œdema and diffuse infiltration of the sub-hyoid region. Parenchymatous goitres are more circumscribed, the shape of the gland is preserved and the tumour is more movable on the deeper structures and with the larynx. There is no œdema. In cystic cases the lobes are unequal, and the tumour is more tense and may fluctuate. In all forms the tumour is increased by cry and effort, especially in the vascular type.

Functional symptoms depend upon compression of the trachea, œsophagus, etc. They are principally cyanosis and dyspnœa. The former may be general in weakly or premature infants, but usually most marked in the face. The symptoms are often aggravated by cough, effort, deglutition and sucking. The child often refuses the breast, sucking and deglutition are difficult or provoke attacks of suffocation. A large tumour prevents ascent of the larynx and fluids may enter the open glottis. There may even be apnœa; the child dies after the tying of the cord or after some spasmodic movements of the diaphragm and cannot be resuscitated. Death may occur some hours or days later in a suffocative attack. If the dyspnœa and cyanosis are less marked the child may survive and the symptoms disappear as the goitre resolves. These grave symptoms occur in about 80 per cent. of cases, in the great majority of which they are incompatible with life.

As to diagnosis, the important point is to have the possibility in mind, especially the latent character of small retro-sternal goitres, since timely interference may save life in some cases. When manifest tumour is present the diagnosis has to be made from enlarged thymus, and branchial cyst in unilateral cases. The latter is more fluctuant, unilateral, does not move on swallowing, and may be made out to be transparent.

Death occurs especially in large congestive goitres, but where the tumour is not so large the child may survive and resolution take place. The gravity depends essentially upon the degree of tracheal stenosis established during intra-uterine life. Out of 39 cases, 16 survived, of which 7 had no signs of stenosis and no functional symptoms at birth, 2 were operated upon, and 7 recovered spontaneously; 23 died, 2 during labour and the other shortly after or during the following days. This yields a mortality of 60 per cent.

When functional symptoms are absent no treatment is called for. Mild degrees of cyanosis and dyspnœa may be combated with sinapisms, leeches, ice, etc. In severe forms a suffocative attack may be relieved by extending the head and dragging the tumour forward. If this fails operative interference is called for. Tracheotomy is useless, catheterisation of the trachea has been tried without success, and partial thyroidectomy is dangerous from hæmorrhage or sepsis. The only operation which has been extended with success is that of exothyropexy, first performed by Pollosson, and again in 1905 by Cadet. Both cases

were brilliantly successful. The operation is simple, easy and rapid, and hæmorrhage slight. After median incision of the skin and fasciæ the tumour is enucleated from each side till only attached by its pedicle. It is then brought outside the wound and fixed by a suture to the upper part of the incision. An aseptic dressing is then loosely applied. The thyroid is thus freed from the pressure of the skin, infra-hyoid muscles and sternum, and the calibre of the trachea restored; while as a remote result the goitre undergoes progressive atrophy.

A similar procedure has been used with success by F. Konig for enlarged thymus.

G. R. Mill.

Axis (E.) **Diagnosis of Liver Abscess.** *Zentralblatt für innere Medicin,* March 30th, 1907.

In spite of antiseptics and well-developed technique the mortality after operation for tropical abscess of the liver is very high (40—50 per cent.), the reason being that on account of the difficulty of diagnosis surgical interference as a rule comes too late. To make a diagnosis with more certainty and early enough, the author looks for changes in the blood and metabolism, and makes out three important points:—

1. He confirms the occurrence of a hyperleucocytosis, already observed by Boinet and Strauss.

2. He found that, as often in other liver diseases, the NH_3 of the urine is increased relatively to the total amount of N, whereas the urea is diminished. In fever there is also found an increase of NH_3, but here at the same time the output of N is by far the greater than the intake, whereas in liver abscess there is a closer correspondence between N intake and N output. Again, the urea in liver abscess cases is not only relatively but also absolutely diminished, whereas in fever there is an absolute increase of urea; thus, the author concludes, if we find in a feverish disease an increase of NH_3 ($\frac{NH_3}{N}$ at least as much as 10—15 per cent. of the whole N) and the excess of N excreted over intake does not correspond to the NH_3 increase, and if at the same time urea is absolutely and relatively diminished, we are justified in diagnosing an anatomical lesion of the liver.

3. The author uses the fact that in even slight pathological changes of the liver an alimentary glycosuria may occur, for diagnosing a liver abscess. But sometimes even in persons with a healthy liver alimentary glycosuria can be produced with greater doses of lævulose. In liver abscess, however, the doses of lævulose may be very small and the glycosuria very marked. The author thinks that the occurrence of sugar in the urine after having taken about one drachm of lævulose is pathognomonic of a severe lesion in the liver.

The triad of (1) hyperleucocytosis, (2) increased NH_3 and diminished urea and (3) alimentary glycosuria is, in the author's opinion, a very valuable symptomcomplex, when with the usual physical methods a

diagnosis cannot be arrived at; and if on repeated examination this triad is always present and perhaps no other symptom besides pyrexia, the author thinks that an exploratory operation is justified.

A report of six cases observed by the author confirms this statement.

EMIL SCHWARZ.

WAGENER (O.) **Thrombosis in the patent Ductus Arteriosus.** *Deutsches Arch. f. Klin. Med.*, 1907, 89, p. 626.

CASES of thrombosis in the unclosed ductus Botalli have been recorded in which the process was secondary to infective endocarditis; other cases have been observed in which this thrombosis was primary, and Wegener records two of these.

One patient, a seven months child, died of pneumonia; its heart and valves were normal, the foramen ovale was closed, and the entrance of the ductus arteriosus into the left branch of the pulmonary artery was closed and marked by a slight depression. The aortic opening of the ductus, however, gave issue to a soft smooth gray-red clot, 1 cm. thick and 2 cm. long, hanging into the aorta and not attached to its wall; no emboli were found, and the aorta was otherwise normal.

The second case, a child two months old, was being treated for diarrhœa and vomiting. The temperature rose to 101·5° one evening for no obvious reason, and next morning the child died suddenly. Death was due to fulminant embolism of the left pulmonary artery by a thrombus formed in the still patent ductus arteriosis, the pulmonary opening of which still contained a piece of clot the size of a lentil. The arterial branch going to the lower lobe of the left lung was most obstructed by the detached thrombus. The heart and its valves were normal; no other evidences of embolism were found.

Wagener remarks that the retarded involution or closure of the ductus arteriosus is not rare, and lays the child open to the danger of this thrombosis and embolism. The literature of the subject is reviewed, and coloured plates of the appearances presented by the clots *in situ* are appended.

A. J. JEX-BLAKE.

Surgery.

EINHORN (M.) **Diagnosis and treatment of Acute Intestinal Obstruction.** *New York Med. Journ.*, lxxxv., No. 20, p. 913.

THIS article is based on experimental ligature of the gastro-intestinal tract of frogs in various regions with subsequent injection of a bismuth emulsion, the site of the obstruction being afterwards verified by *x*-ray photographs. The author has only made use of this method on one occasion in practice, and that in a chronic obstruction of the large gut, the bismuth being swallowed and injected per rectum; the region of the stenosis was visible in the photograph.

LAWRENCE JONES.

MOYNIHAN (B. G. A.) **Duodenal Ulcer.** *Practitioner*, 1907, p. 747.

A GREAT advance has been made in the diagnosis and treatment of this disease. In 1901 the author reported seven examples on which he had operated; in only one was a definite diagnosis made; since then, owing to accidental discovery of the lesion during operations for supposed gall-bladder or gastric disease it has become apparent that the condition is far from rare. Up to the end of 1906 Moynihan had operated on 114 cases, in 11 of which the ulcer had perforated, and in 2 it was associated with an hour-glass stomach. The ulcer is nearly always situated in the first part of the duodenum just after the pylorus, up to which it usually extends; the anterior surface is the common site. There is frequently a second ulcer opposite the first, but multiplicity is not a common feature; the ulcer may be quite small or may give rise to stenosis or may be associated with a large inflammatory mass. It is frequently combined with a gastric ulcer, and perhaps is due to the intolerance of the duodenal mucous membrane for hyperacid gastric juice.. In the present series the males exceeded the females in the proportion of two to one. The average age was 38.

The symptoms are so typical that a diagnosis can frequently be made without an examination. The main features are the relief of pain afforded by food, the pain returning regularly two or three hours after a meal and being situated in the epigastrium, radiating to the back and right side; with the pain there are frequently eructations and flatulence, but no vomiting. The appetite is usually good; the symptoms often show a marked tendency to remission in their severity. Constipation is frequent, but there often is not much wasting.

The author thinks that the majority of cases of so-called hyperchlorhydria are in reality examples of this diseases. Hæmorrhage either in the form of melæna or hæmatemesis was noted in 41 cases out of the 114, and should be regarded as a more dangerous event than when

due to gastric ulcer. Eleven perforated ulcers have been treated, successfully on nine occasions.

In the case of gastric ulcer, the author has no hesitation in saying that medical treatment is the correct method, at any rate at first; but for duodenal ulcer he does not think that surgical treatment should be long delayed. Hæmorrhage he regards as an absolute indication for operation. The correct treatment is the performance of a posterior gastro-enterostomy; such has been done by him 101 times, with a fatal result in two cases; in five patients a subsequent history is not forthcoming, while one patient was not improved, five are "improved" and the remainder have given exceedingly satisfactory results. The patient should be carefully dieted for three months following the operation.

LAWRENCE JONES.

PARHAM (F. W.) **Shock.** *New Orleans Med. and Surg. Journ.* No. 7, p. 879.

THIS paper is based on a series of 2,000 cases operated on from 1892 to 1903. The operation performed was almost without exception a modification of Bassini's method. A percentage of 92 permanent cures is claimed to have followed (for a period varying from 1½ to 4 years). The modification consists in using the cremaster to assist in forming the posterior wall of the canal. There were nine deaths, but none of these could be ascribed to the radical cure; the majority followed strangulated hernia. The average stay in the hospital was 17·7 days. The ages varied from 4 months to 76 years; the majority were between 20 and 40. Strangulated hernia was operated on 105 times, with 6 deaths. In 26 patients there was present a femoral hernia in addition to the inguinal hernia. The cæcum was found in the sac on 40 occasions; and the appendix was removed 25 times. There are numerous other details of interest extracted from this long series of cases.

LAWRENCE JONES.

BRENNER (A.) **The radical cure of Inguinal Hernia.** *Arch. für klin. Chirurg.* Band 79, Heft 4, p. 1081.

THE author rightly points out that it is not easy to see why this disease is so rapidly fatal. In fatal cases no peritonitis is found, and usually no bacteria. One therefore might take refuge in the close proximity of the pancreas to the solar plexus and might ascribe the rapid death to pressure on the latter by blood effusion or swelling of the pancreas; it can, however, hardly be due to the former, for this is free in the abdominal cavity and can exert no more pressure than an ascites. Mikulicz considered the injurious results depended not only on the ferments themselves but also on the products of the dead pancreatic cells. Von Bergmann and Guleke by experiments on dogs, in which the pancreas of one was placed in the abdominal cavity of another, showed that it exerted a toxic action, and that this was due to trypsin, for an

animal immunised against trypsin survived the operation. The author has attempted to produce in dogs a disease anatomically similar to acute hæmorrhagic pancreatitis in man, an attempt successful after completely shutting off the pancreas by ligature. He has performed this on 21 dogs, all of which died within thirty hours and presented the typical appearances of the disease. Further, he found that healthy and fresh pancreatic tissue placed in the peritoneum did not cause such a result, but if the pancreatic tissue after ligature of the pancreas was placed in the peritoneal cavity of another dog the signs of the disease were again produced. By increasing doses of the products of such a pancreas it is possible to immunise the dog against such a result. From these experiments he concludes that the toxic substances are only formed in the diseased pancreas and are not found in the healthy organ.

LAWRENCE JONES.

DOBERAUER. **The cause of death in Acute Pancreatitis.** *Arch. für klin. Chirurg.* Band 79, Heft 4, p. 1164.

THE author accepts Crile's teaching as to the cause of the phenomenon of shock, collapse and syncope, and bases his treatment on this. In syncope there is suspension of cardiac and vasomotor functions due to brain anæmia, hence lowering of the head, elevation of the rest of the body and cardiac stimulants are required. In collapse there is the same suspension of cardiac function, but here it is most frequently due to copious hæmorrhage, therefore the trunk and extremities should be elevated so as to fill the heart with blood from the veins, while vasomotor stimulants are of use combined with saline or other infusion. Shock is so difficult to overcome that the consideration of its prevention is of more importance than its treatment. It is prevented in three ways:—(1) The avoidance of all unnecessary or rough manipulations during operation, especially in abdominal and cranial surgery; (2) the prevention of impulses from the operation area ascending to the brain, either by the blocking of nerve trunks by cocaine injection or by subarachnoid injections of stovain, alypin, etc.; (3) rendering the centres less susceptible to irritation, *e.g.*, by morphia and general anæsthetics. He considers ether to be the anæsthetic for choice, but appears on the whole to be in favour of local anæsthesia, and quotes Wainwright, who, *apropos* of Oliver Wendell Holmes' remark that with ether we go over into the valley of death but with a return ticket, comments: "The trouble is that so many things may happen to the return ticket. We may lose it or we may overstay the time limit; or the men at the gate may refuse to let us through, or we may get a fatal pneumonia during our travels."

LAWRENCE JONES.

SCHALDE (J. E.) **The Antrum of Highmore as an etiological factor in the production of Hay Fever.** *Medical Record,* 1907. Vol. lxxi., p. 841.

THIS is a strong plea for the view that disease of the antrum of Highmore is the "basic lesion" in a fair number of cases of hay fever.

According to the writer these cases may be regarded as cases of "antral neurasthenia," the symptoms which constitute this neurosis being reflexly due to irritation within the antrum. In support of this "antral theory" a number of cases are quoted in which, after all other methods had been tried, treatment directed to the antrum resulted in prompt relief, and in some cases even permanent immunity, from hay fever. As a rule some abnormality of the ostium maxillare was detected on examination, and treatment was applied per vias naturales; in other cases puncture was made through the nose. (Presumably all rhinologists would agree that if a hay fever patient was found to have antral disease this should be effectively treated, but it is doubtful whether in even a small percentage of cases such a lesion exists. On the other hand, there is no evidence to show that patients with antral disease are commonly subject to hay fever.) P. R. Cooper.

Coley (W. B.) **Sarcoma of the long bones.** *Annals of Surgery*, vol. xlv., 1907, p. 321.

This is a report of sixty-nine cases, comprising all the cases which have come under the writer's observation. Of these, in 36 the femur was affected, in 13 the humerus, in 13 the tibia, in 3 the radius, in 2 each the fibula and ulna, in 1 each the metatarsal and metacarpal bones. In 34 the growth was periosteal, in 22 it was central, in the rest the type was not stated. In 34 cases the patients were males, in 35 females. The ages varied from 20 months to 56 years, the most frequent ages being 10 to 40 years. There was a definite history of trauma in about one-half of the cases.

The points of special importance in *diagnosis* mentioned are: (1) the age of the patient; (2) presence or absence of history of local injury; (3) family history of "malignant disease;" (4) state of general health; (5) location of swelling as regards proximity to a joint; (6) presence or absence of pain; (7) duration of growth; (8) periosteal or central origin of growth; (9) consistence of growth; (10) *x*-ray examination; (11) examination of blood; (12) microscopical examination of section removed either with tumour punch or by operation.

The *prognosis*, even after such radical operations as amputation or ex-articulation, has been very discouraging, but the writer believes that by the use of his toxins more favourable results can be obtained.

The *treatment* recommended is a combination of operation and toxin treatment. The writer has collected 12 cases in which the use of his toxins has rendered amputation unnecessary. He says: "If we could offer the patient reasonable certainty of life by amputating the limb there might be some ground for hesitating to try the toxin treatment before amputation; but, in the face of our inability to save the life of the patient except in a very small minority of cases, I feel that we are risking little in giving the patient the benefit of a brief trial with the mixed toxins. A period of three to four weeks will almost always be sufficient to determine the probable success or failure of the treatment. If a tumour continues to increase in size during this period

then I would not prolong it to the full four weeks, but would amputate at once, and then as soon as practicable continue the toxins as a prophylactic against recurrence. With this important exception I would limit the use of the toxins to *inoperable* sarcoma, which has always been my custom in the past. About 10 to 12 per cent. of such cases, hopeless from any other standpoint, have been successful."

P. R. Cooper.

Lloyd (S.) **The surgical treatment of Empyema.** *Annals of Surgery*, 1907. Vol. xlv., p. 373.

The writer's method of operation is as follows:—The opening in the chest is made in the usual way, and should take in from one to three or four ribs, according to the age of the patient, the size of the cavity and the difficulty of reaching the collapsed lung. The pleura is incised, and the accumulated fluid allowed to drain away gradually. Before opening the pleura the anæsthetic (ether) should be stopped in order that an overdose would be avoided in case the lung should suddenly expand and break away from its adhesions and also that the patient may be gradually coming out of the anæsthesia during the remainder of the operation. As soon as the fluid has drained away the opening in the pleura is made sufficiently large to enable the operator to thoroughly explore the whole pleural cavity and to accurately locate the position of the collapsed lung. Any large masses of coagulated lymph are removed, using a curette if necessary. The finger then sweeps over the lung to separate adhesions, or if separation cannot be effected the adhesions are freed by means of a curved periosteotome. During the progress of this manœuvre the sensitiveness of the pleura asserts itself, the partially anæsthetised patient commencing to cough each time the finger is passed over the pleural surface. With each forced expiration the lung expands, until when the adhesions are fully broken up the lung entirely fills the pleural cavity and may even bulge through the wound. Where the lung is adherent to the diaphragm it is advisable to loosen the diaphragmate adhesions first. As far as possible the operator should try to keep in contact with the parietal pleura whilst separating adhesions so as to avoid tearing the lung; however, the writer does not view such an accident with any anxiety as the opening in the lung usually closes quickly. As a rule there is no trouble from hæmorrhage, but should such occur the writer advises bringing the patient under complete narcosis again; the collapse of the lung which then results will either alone check the bleeding or permit of its arrest by other means. The writer also favours washing out the pleural cavity with hot saline poured from a pitcher two or three times during the separation of adhesions, so as to check oozing and clear out lymph and clot. He uses a short rubber drainage tube flanged at both ends.

P. R. Cooper.

Goeltz (F. A.) **Successful Anterior Thoraco-Bronchotomy for a foreign body impacted in the bronchus.** *Annals of Surgery*, 1907. Vol. xlv., p. 369.

This is a report of a case of a boy, aged $6^{9}/_{12}$, who inspired a small metal collar button. He became subject to alarming attacks of coughing and dyspnœa. The pulse and temperature were normal. Examination showed limited movement on the right side with absence of respiratory murmur. Fluoroscopic examination of thorax negative.

Operation. Through a low tracheotomy wound the foreign body could be felt in the right primary bronchus by means of a large probe. Attempts were made to dislodge the obstruction, but failed. A curved incision was made, beginning over the 2nd rib just beneath the middle of the clavicle and carried downwards and inwards to within 1 in. of the right margin of the sternum, thence outwards to the level of the 5th rib 1 in. to the inner side of the nipple. The cartilages of the 3rd and 4th ribs were cut about ½ in. from their sternal attachment and an osteoplastic flap made by breaking the 3rd and 4th ribs. Through this opening good access to the lung was secured. The lung was found partly collapsed, and the button could be palpated through it. As it was impossible to roll back the overlying lung an incision ½ in. long was made through the lung into the bronchus. A pair of artery clamps, introduced through this incision, grasped the button, and by a twisting motion it was removed. Little or no hæmorrhage occurred from the lung and bronchus. No sutures were applied and no drainage was used. The thoracic wall flap was replaced, silkworm gut sutures being inserted through the muscles. The tracheotomy wound was partly sutured, but owing to considerable emphysema of the cellular tissue a tracheotomy tube was introduced. The patient was severely shocked even before the opening of the thorax began. Normal saline was injected into a vein and the patient slowly rallied. At the end of 48 hours the temperature was 101°F., pulse 116 to 128, respirations 38 to 56. The subcutaneous emphysema had disappeared, the tube was removed. The subsequent progress was satisfactory, the pulmonary condition gradually improving, and being finally restored to normal by means of pulmonary exercises. The writer is strongly of opinion that too much time should not be spent in attempts at forcible dislodgement of a foreign body before resorting to bronchotomy.

P. R. Cooper.

Peck (C. H.) **Drainage of the Knee Joint in severe infections by the transverse incision.** *Annals of Surgery*, 1907. Vol. xlv., p. 409.

The technique described by this writer is as follows:—

1. A transverse curved incision crossing the patellar ligament to the posterior border of the condyles and prolonged upwards as a shallow V.

2. Complete division of the patellar ligament, anterior capsule, both

crucial and both lateral ligaments, leaving the posterior ligament alone intact, allowing separation of the bones and opening widely the posterior recesses of the joint.

3. Lateral incisions through the quadriceps bursa, muscle and aponeurosis, allowing the complete turning back of the anterior flap, including the patella and all tissues down to the joint, which is then fastened to the skin of the anterior aspect of the thigh with a heavy silk suture, opening the great bursa widely to its apex.

4. Light packing of the entire joint with gauze moistened with a weak solution of bichloride or formalin and fixation of the limb in flexion on a suitable splint.

5. Secondary resection of the joint after suppuration has ceased, the temperature is practically normal, and the joint wound surfaces are covered with healthy granulations.

The method is only applicable to severe cases in which ordinary drainage and irrigation have failed to check suppuration, or in which the general sepsis is such a grave menace to life as to prohibit the trial of less radical measures. It is preferable to amputation, and will, in the writer's opinion, frequently save life and secure a useful limb without joint movement. In less severe cases, where it is possible to save the crucial ligaments, it may be possible to straighten the limb without resection, and re-suture the patella or its ligament, so perhaps preserving some degree of function in the joint.

P. R. Cooper.

Battle (W. H.) **Traumatic Rupture of the Intestine.** *Edin. Med. Journ.*, 1907.

In this instructive article Battle draws attention to the difficulty of diagnosis and the danger of delay, giving notes of several very interesting cases. The symptoms of traumatic rupture of gut are similar to those of a pathological perforation, but masked to some extent by the local trauma. The classical group of symptoms is as follows: severe local pain, vomiting, shock, fixity of the abdominal wall followed by a rise of temperature and rapid pulse. The pain, vomiting and shock may be present in a contusion of the abdomen without loss of continuity of the gut. Vomiting, however, is a sign of importance when it persists or recurs after an interval. Shock cannot be relied on as a primary symptom for most alarming shock may follow a blow over the area of the solar plexus without serious damage to any viscera; this, however, is usually rapidly recovered from. Rigidity of the abdomen is to be regarded as a most valuable sign; in some cases of rupture of the intestine the abdominal walls appear immoveably fixed, respiration being entirely thoracic and the patient shouts with agony on taking an inspiration. The French surgeons have long regarded rigidity of the abdominal muscles as a sign of paramount importance, and Hartman reports 17 cases in which this sign was present, in each of which rupture of the intestine was demonstrated. Percussion of the abdomen is of some value in these injuries. Dulness in the front of the

abdomen Battele believes to be due to hæmorrhage from the mesentery, though Mr. Bernard Pitt thinks it may be caused by collapsed intestine as a result of temporary paralysis. Dulness in the flanks is usually due to hæmorrhage from one of the solid organs, as rarely, if ever, do the contents of the small bowel leak sufficiently to cause marked dulness. Battle draws attention to a sign to which he does not think sufficient importance has been attached, namely, a marked rise of temperature within a short time of the injury. He has found in several cases a temperature of 102° or 103° within a few hours of rupture of the gut. He strongly advocates early operation in these cases as the only means of saving life, and urges reunion of the edges of bowel after resection of the damaged portion in preference to the formation of an artificial anus for the following reasons:—

1. The rupture is generally high up in the jejunum, most frequently in the first three feet, which is a bad position for an artificial anus from the difficulty met with in feeding the patient.

2. The rapidity with which union can be effected.

3. The risks of a later operation for closure of the opening in a patient whose general condition is bad.

From 1887 to 1906 thirty cases of rupture of the intestine were under observation at St. Thomas's Hospital; twenty-five of these were submitted to operation, and six recovered, which is to be regarded as a high percentage of recoveries.

P. R. Wrigley.

Erdmann (J. F.) **Appendicitis in infants and children.** *Medical Record*, May 11th, 1907.

In this paper based on a hundred cases the author draws attention to the great mortality in appendicitis occurring in infants under three years. This is due to its rapid progress as to spreading, loss of resistance and toxæmia. The difficulty of diagnosis is increased by the position of the appendix from non-descent of the cæcum. The appendix is frequently not in its normal position until the third or fourth year, lying high up, even under the costal arch. In making a diagnosis, gastro-enteritis, intussusception and obstruction due to hernia are the main diseases to consider. Erdmann has found that almost invariably the child places its hand in the region of the appendix to ward off manipulation in this region. In this series of cases there were seven deaths from the following causes:—Pneumonia 2, sub-phrenic abscess 1, general suppurative peritonitis 4. Erdmann is a firm believer in immediate operation when once a case is diagnosed as appendicitis. The McBurney operation was done where no mass could be felt or where it was well confined to the iliac fossa. The incision which splits the rectus was done where the mass lay towards the middle line. As a rule he used no gauze protecting drain, but wiped up the discharge rapidly with dry sponges. When the cavity is quite dry the appendix is found and the meso-appendix ligatured and the appendix removed. Occasionally it is necessary to shell the appendix out of its serous and

muscular coats owing to dense adhesions. The wound is drained or not as circumstances indicate. In regard to after treatment, calomel is given in $^1/_{10}$ grain doses as soon as the vomiting ceases until 1 grain has been given. Nothing is given by the mouth until flatus has been passed or the bowels moved, saline enemata being given by the rectum from the start and the patient is placed in the semi-recumbent position if drainage has been adopted.

P. R. Wrigley.

Sénéchal (M.) **A case of Dislocation of both Great Toes inwards.** *Gaz. des Hôpitaux*, April 26th, 1907.

The patient, aged 64, sustained his injury by letting fall a sack of flour on to his feet, the circumstances being such that the great toes alone sustained the shock, the little toes being protected. Reduction was accomplished by a practitioner and splints applied to maintain the reduction. Reduction, however, was not permanent, and the patient returned to his work with the disablement. Pain on standing and walking became so acute that further advice was sought. On examination the feet resembled those of quadrupeds, the dislocated toes producing a claw-like appearance. The head of the metatarsal was very evident under the skin, while the adductor muscle was very prominent, and indeed had become permanently retracted; this fact rendered reduction impossible and treatment by resection of the head of the metatarsal inadvisable from fear of rapid reproduction of the original lesion. The treatment adopted was disarticulation of the toes, which gave a perfectly satisfactory result.

F. G. Hack.

SOME RECENT CONTRIBUTIONS TO THE SURGERY OF THE BRAIN.

By P. R. Cooper.

Hartley (F.) and Kenyon (J. H.) **Experiences in Cerebral Surgery.** *Annals of Surgery*, 1907. Vol. xlv., p. 481.

Attention is directed to the following points of technique:—

1. The use of a small motor, of such size and weight that it can be held by the operator, giving him perfect control of the cutting tool and obviating the use of a flexible shaft, sterilisation being provided for by enclosing the instrument in a removable metal case.

2. The use of a special cutter which permits the entering of the cranial cavity without fear of suddenly pushing through the vitreous plate.

3. The use of a circular saw, with Doyen's guards.

4. The use of Chipault's method of cranio-cerebral topography.

5. The use of omega-shaped flaps which obtain their blood supply from the temporal or occipital arteries.

6. Dividing the bone at the thickest parts with the saw and leaving the thinnest part of the bone, *i.e.*, at temporal fossa, as the base of the flap to be broken across.

7. Replacing the bone—preferably by autoplasty, the bone edges being cleanly cut with a narrow slit, and slightly bevelled, so as to avoid pressure on the brain.

8. Throughout prompt control of hæmorrhage to save time and lessen shock.

The writer's method of operating is described in detail; first, as to the general plan of procedure; secondly, as to the special flaps required for exposing the several lobes of the cerebrum as well as the cerebellum on one or both sides.

Records are given of five cases of operation on the *frontal region*, all of which recovered, and all but one of which were improved; three cases are also noted in which no operation was performed, but a careful autopsy was made. Seventeen cases of operation upon the *parietal region* are mentioned—four of traumatic cyst, three of which were cured (one unimproved); one of non-traumatic cyst (unimproved); three of adhesions (one cured, two unimproved); one of endothelioma (recovered); one of gliosarcoma (recovered); one of laceration and hæmorrhage (recovered); six of exploratory operation (two died within two days, one cured, three unimproved).

Records of four cases of operation on the *occipital region* are given, with one death and three good recoveries; another case is mentioned in which no operation was performed but the results of autopsy are described.

GRAY (F. D.) **Possibilities and limitations of Brain Surgery, with especial view to Traumatisms.** *Annals of Surgery*, 1907. Vol. xlv., p. 531.

In this paper the writer comments upon a number of cases of brain injury which have come under his observation, and draws the following conclusions:—

1. In traumatic conditions of the brain, consciousness or unconsciousness, pulse-rate and tension, temperature course and localising symptoms, if present, are the most important factors in determining diagnosis, prognosis and treatment. Of all these "the temperature course is probably the best index of the severity of the lesion."

2. Long-continued unconsciousness implies either extensive pressure by depressed bone or blood-clot, or else brain contusion. Severe contusion of the brain results in organic injury of grave import owing to disintegration of brain cells and consequent cerebral œdema; it is, unfortunately, not amenable to operative treatment. This condition may be suspected when with prolonged stupor following injury there is rising and later irregular temperature.

3. Disease or injury of the motor areas offers the best opportunity for operative treatment when unconsciousness is not present, but it must not be forgotten that abscess or tumour in the "silent regions" may, by transmitted pressure, simulate motor area lesions.

4. The possibility of fracture of the skull in injuries to the head should always be borne in mind, and any scalp wounds carefully explored for evidence of such fracture, and if found these should be suitably dealt with.

5. The possibility of intra-cranial infection through even a small fissured fracture of the skull, and in some cases also without fracture, *i.e.*, by an emissary vein, should also be remembered and guarded against.

6. Evidence of brain pressure occurring at some interval after skull traumatism is ground for suspecting brain abscess.

7. The presence of brain pulsation and absence of appreciable tension are not always reliable evidence of the absence of abscess or tumour.

8. Evidence of disturbed mentality, *e.g.*, alcoholism, must not be lightly dismissed in the presence of skull traumatism.

9. If early operation be decided upon to control hæmorrhage due to fracture of the cranial vault, wide exploratory incisions of the scalp are advisable.

10. Operation for removal of pressure, *e.g.*, from hæmorrhage, are successful even after long intervals, *e.g.*, two years or more.

KEEN (W. W.) **Severe Burn of Top of Head at seven months of age, followed by Necrosis of entire osseus cap of cranium.** *Annals of Surgery*, 1907. Vol. xlv., p. 641.

THE case here recorded was admitted for treatment at the age of 14. The boy semed physically well-developed, but his face presented a dull appearance. The deformity of his skull was very marked, showing a deep furrow a little to the right of the middle line, running obliquely from behind forwards and to the right. On the top of the head was a very large scar, in which deficiency of the bones could be made out over an oval area 8 by 5 cm. Several points of ulceration were present. The whole scalp was tense. He suffered from frequent epileptiform

attacks, and these were evidently impairing his mental condition. There were no evidences of organic disease.

Operation. It was decided to perform a complete linear craniotomy so as to separate the entire top of the skull from the lower portion, thereby relieving the pressure on the brain. This was done through several (8) incisions, and by undermining the scalp and drawing the soft parts aside it was possible to complete the division of bone. The operation was done at two sittings about a week apart. Very little pain followed either operation. The temperature only once rose above 100°F. The patient said his head felt better, and there seemed to be an improvement mentally. Two years later the patient's father stated that he then had fewer attacks, and his intelligence was slowly improving.

BRUCE (H. A.) **The value of Trephining as a palliative measure in Tumours of the Brain.** *Annals of Surgery*, 1907. Vol. xlv., p. 543.

THE writer here records the histories of five cases of brain tumour upon which he has recently operated. Two of the operations were performed at the terminal stage, the patient dying shortly afterwards, and in the one case a cerebellar tumour and in the other a tumour of the crus cerebri, were found at autopsy.

In the third case—a woman, aged 40—the patient was excitable, almost maniacal, with suicidal tendency, complaining of intolerable "bursting" headache; she had also vomiting, strabismus, diplopia, ptosis, optic neuritis, etc. Even a grain of morphia hypodermically did not give much relief to the headache. Trephining and opening of the dura with insertion of a gauze drain was followed by almost immediate relief from headache and vomiting. The relief to pain continued as long as drainage was maintained, and on several occasions when the small opening through which cerebro-spinal fluid could escape closed and the headache recurred it was promptly alleviated by probing. The general condition markedly improved, and the ptosis and diplopia disappeared, but there was no amendment of vision.

In the fourth case—a female, aged 35—there were unequivocal symptoms of cerebellar tumour, and the patient had loss of sight of four weeks' duration due to definite double optic neuritis. She had also anosmia and deafness on the left side, etc. The skull was trephined over the left cerebellar region; the cerebellum was explored, a thick-walled cyst found and evacuated, and a gauze drain left in the dura. Steady improvement followed, pain, dizziness and vomiting disappearing and eyesight gradually returning.

In the fifth case—a child, aged 10—the first symptoms were the occurrence of "bilious attacks." These became more frequent and severe, *i.e.*, every second day, the patient waking in the morning with intense headache. Double optic neuritis was found on ophthalmoscopic examination. There were no localising symptoms. On trephining the

dura was very tense, and on opening it a large hernia cerebri formed. The brain was explored without result. The dura was left open and the scalp closed without drainage. The patient has since been free from pain and vomiting and made a rapid and satisfactory recovery.

MARTIN (F.) **The surgical treatment of Trifacial Neuralgia.** *Annals of Surgery*, 1907. Vol. xlv., p. 649.

THIS writer has evidently very little faith in peripheral operations, as they usually result in giving only temporary relief. In several cases he has resorted primarily to the ganglia operations. He states: "It seems to be pretty definitely settled that total removal of the ganglia as distinct from a partial operation is attended by permanent cessation of pain." The keynote of a successful operation, however, is the avoidance of hæmorrhage, which is doubtless responsible for the high mortality, although Sir Victor Horsley's record of 120 operations with only six deaths shows that in the future the mortality will probably be much reduced. The writer strongly deprecates demonstrating the operation before a class. Complete section of the sensory root behind the ganglion is the most essential step in securing perpetual relief of pain, and, in the writer's opinion, if this is done it does not matter whether the ganglion be removed or not. Care must be taken not to open the cavernous sinus, and the best way to avoid this is to work well up the back of the ganglion towards the pons, so as to free it from its bed. Details of eight cases are appended showing two deaths—one from ether pneumonia and one from shock occasioned by hæmorrhage during operation.

DAWBARN (R. H. M.) **Sequestration Anæmia in brain and other Surgery.** *Annals of Surgery*, 1907. Vol. xlv. p. 161.

THERE can be no doubt that every drop of healthy blood saved to the patient during an operation is worth while; moreover, the absence of obscuring hæmorrhage, of frequent interruptions for sponging, etc., such as are secured by the use of Esmarch's "bloodless method" in operations on the limbs, have proved invaluable aids to surgical technique. We cannot of course apply the ordinary "bloodless method" to controlling hæmorrhage from the brain, but, as the writer here points out, by accumulating blood in the limbs and then applying the elastic bandage, we can render the brain relatively anæmic, and so diminish hæmorrhage during intra-cranial operations. This is what he means by "sequestration anæmia." Its technique is as follows:—A towel folded lengthwise is wrapped about each thigh very close to the trunk, and upon this the rubber tube is tightened, the degree of tightness being such as to nearly stop the venous but not the arterial current. In from five to ten minutes the softened pulse indicates that the patient is ready for operation. The congested limbs are kept warmly wrapped, and hot water bags placed about them. Only in case the limbs grow

excessively swollen or the pulse demands a change, is the tension altered during operation. It is usually sufficient to constrict the lower limbs at the groin. The return of blood must be permitted gradually. In order to avoid "reactionary hæmorrhage" in the operating field the writer advises the application for several seconds to the raw surface of gauze sponges wrung dry, with the rubber-gloved hand, out of *boiling* water. The advantages claimed by the writer for this method are therefore—(1) diminished blood loss; (2) lessened amount of anæsthetic required; (3) facility and hence shortened period of operation; all of which contribute to (4) decreased shock; further (5) should indications of shock appear one or both tourniquets can be released and the failing circulation augmented.

The writer frankly admits certain *contra-indications* to the method, viz., (1) atheroma and other diseases of the vessel walls; (2) certain blood conditons, *e.g.*, septic conditions, severe anæmia, etc., which would favour thrombosis, and even (3) cause risk of pulmonary embolism; (4) an excess of lime salts in the blood is also mentioned.

Pathology.

Spriggs (E. I.) **Pseudohypertrophic Muscular Dystrophy and the Excretion of Creatinin.** *Bio-Chemical Journal*, 1907, ii., p. 206.

The author points out that while creatinin has long been regarded as a product of the metabolism of muscle, little is yet known as to its excretion in diseases involving the muscles. He has examined the excretion of creatinin in the urine of a man of 29 weighing 50 kilograms, who had suffered from pseudo-hypertrophic muscular paralysis for eight years. Diets of known composition were given to the patient. Spriggs found that on a diet free from meat and meat extracts the amount of creatinin passed in the urine was about half that in normal persons of the same weight, while the proportion of N excreted as creatinin on an ordinary diet was less than normal. The muscular tissues of the patient had suffered much reduction, and these results are therefore in agreement with the prevailing view that creatinin is derived from muscle to a greater degree than it is from other proteid tissues. On a diet of adequate caloric value containing very little proteid the elimination of N sank in four days to 2 grams per diem, when the proportion of N excreted as creatinin approached that found in normal persons on such a diet.

A. J. Jex-Blake.

Almkvist (J.) **The Pathogenesis of Mercurial Stomatitis and Colitis.** *Hygiea*, March, 1907, p. 237.

It has been supposed that the inflammations of the gums and large intestine in cases of mercurial poisoning are due to local injury or necrosis of the tissues by the mercury salts applied to or excreted by them. Grawitz (1888) believed that the melæna accompanying the colitis was due to violent tonic contraction of the muscular layer of large intestine, caused by the mercury circulating in the blood, and the consequent hyperæmia of the mucosa. Others have attributed the melæna to contraction (Elbe, 1905) or thrombosis (Kaufmann, 1889) of the smaller vessels in the colon. In 1903 Almqvist put it down to the degeneration in the vessel walls caused by the mercury; this was first noted by Heilborn (1878), who observed granules (of HgS perhaps) deposited in the walls of the vessels. Almqvist showed that the black deposit formed by these granules resembled HgS in being soluble in KI_3 solution, alcoholic iodine solution, or Na_2S solution containing a little caustic soda, but insoluble in HNO_3 or in KI solution. From his experiments upon rabbits he argues that the deposits disturb the circulation, with the production of local necrosis and ulceration of the mucous membrane secondarily. They are deposited first in the superficial capillaries of the gut, and in the deeper vessels later; the

hæmorrhages are preceded by necrosis, and hæmorrhagic infarcts stained black with blood-pigment (and not with HgS) are often seen.

Almkvist details two cases of mercurial poisoning in which he was able to examine the tissues post-mortem. In one a surgical patient was given a subcutaneous infusion of corrosive sublimate solution containing 27 grains of $HgCl_2$ by mistake for a solution of normal saline. Sixteen hours later local necrosis at the site of the injection and gingivitis were observed, and the mistake was discovered; the urine contained 0·5 per cent. of albumen. The necrotic tissues were excised at once; anuria was observed on the fourth day, the stomatitis grew worse, bloody diarrhœa and vomiting appeared on the sixth day, and the patient died on the eleventh day after the injection. The large intestine exhibited much superficial necrosis of the mucous membrane, with dilated capillaries containing HgS deposits; but no infarcts were found. The kidneys showed an acute hæmorrhagic nephritis. The second case was that of a patient under treatment for syphilis; he had received numerous subcutaneous mercurial injections in the course of fourteen months, and died after two months' severe illness with stomatitis and albuminuria complicated by uncontrollable bloody diarrhœa. The colon showed much necrosis of the mucous membrane; there were HgS granules in the walls of its vessels, but the majority of these granules has been ingested by leucocytes and could there be seen and recognised, as was the case in rabbits dying of chronic mercurial poisoning.

The author has examined portions of the gums from four cases of mercurial stomatitis. Here, as in the colon, the process begins with the laying down of HgS granules in the capillaries of the papillæ of the mucous membrane just where it abuts the teeth. In later stages necrosis of the superficial tissues and aggregations of small round cells can be seen. The vessels show more dilatation in the colitis than they do in the stomatitis, and this may account for the comparative rarity of bleeding from the mouth in mercurial poisoning. Numerous references to the literature are given.

A. J. Jex-Blake.

Lustig (A.) **On the immunising properties of the Nucleo-proteids of Bacteria.** *Lo Sperimentale*, Anno lxi., Fasc. iii.

After discussing the nature and actions of nucleo-proteids, so far as they have been demonstrated by experiments, and having pointed out that they are fairly definite substances which can be measured both as regards nature and action and that they possess definite immunising properties of anti-bacterial nature, Prof. Lustig expresses the opinion that they are of extreme importance both from a scientific and a practical clinical point of view. From the latter standpoint he looks upon them as holding amongst immunising substances a position comparable to that held by alkaloids, as compared with infusions and decoctions of varying composition, amongst drugs, and he foresees that eventually as alkaloids have replaced less definite means so also will nucleo-proteids replace other immunising solutions and substances.

Arthur Robinson.

DADDI-MARCHIONI (C.) **A contribution to the knowledge of modifications of Pancreatic Secretion in some pathological conditions and in some experimental intoxications.** *Lo Sperimentale,* Anno lxi., Fas. iii.

EXPERIMENTING on dogs in which pancreatic fistulæ had been made, Dr. Daddi-Marchioni found that the animals were normally sensitive to typhoid and choleraic toxins and more acutely sensitive to diphtheria. Typhoid toxins caused a considerable increase in the tryptic, amylolytic and lipolytic activity of the pancreatic secretion, and the bodies of the bacilli produced even more marked effects. The typhoid toxin was not eliminated in the pancreatic secretion, or if it was it did not retain its toxic power, and the secretion had no agglutinic action on the bacilli. Diphtheritic toxin, on the other hand, diminished the tryptic, amylolytic and lipolytic actions of the succus pancreaticus, and it also was not eliminated with the secretion, or if it was it had lost its toxic power. In a case of pyæmia in a dog Dr. Daddi-Marchioni noted a rapid diminution of the activity of the tryptic ferment, a notable diminution of the lipolytic action and an increase of the amylolytic power, and in a case of peritonitis due to perforation he noticed a suspension of pancreatic secretion.

ARTHUR ROBINSON.

GUERRINI (G.) **On the action of Degenerated Muscle.** *Lo Sperimentale,* Anno lxi., Fasc. iii.

EXPERIMENTS with the muscles of frogs lead, in Dr. Guerrini's hands, to the conclusions that in degenerated muscles the curve of contraction is lower and longer, the lengthening occurring more especially in the second part of the curve.

ARTHUR ROBINSON.

BIAGI (N.) **On the capability of resistance after removal of the Spleen.** *Lo Sperimentale,* Anno lxi., Fas. iii.

DR. BIAGI finds that removal of the spleen has no serious effects on the animal's condition, nor does it apparently lessen the capability to resist disease, and he concludes, from his experiments, that the hæmolytic, bacteriolytic and agglutinitic substances found in the blood are not produced exclusively by the spleen but most probably by the liver and the medulla of bone also, the bone having no predominance.

ARTHUR ROBINSON.

GARDNER (F.) **Cervical Ribs in the human subject.** *Gazette de Hopitaux,* No. 56, May, 1907; No. 62, June, 1907.

DR. GARDNER'S account of cervical ribs is an excellent summary of the observations which have been made in the past of our knowledge of the anatomy of these interesting atavistic bones, of the symptoms and

physical signs by which their presence is sometimes announced, and of the treatment which should be adopted to relieve any troublesome conditions which they may cause. He points out that they were recognised by Hunauld in 1740, and he shows that they have been much more frequently recorded since radiography became a common means of clinical investigation. As a rule the accessory ribs are bilateral, but not infrequently they differ greatly in size and the smaller of the two is frequently only discoverable by the use of the radiograph. Generally there is only one cervical rib on each side and the subclavian artery and the brachial plexus pass either above or in front of it according to its length. Occasionally two cervical ribs may be present on the same side and in such cases the subclavian artery may pass between them. They appear to be more common in the female than in the male, and when they become sufficiently prominent to cause symptoms these symptoms are more apt to occur after than before fifteen years of age. Naturally when the accessory ribs are large they tend to press upon the brachial plexus and the main blood-vessels of the upper limb; under these circumstances it is obvious that the main symptoms will be pain, irregular contractions of muscles, anæsthesias and paralyses, œdema and in a few cases gangrene. The diagnosis indicated by the symptoms and physical signs, is readily substantiated by palpation and radiography, and the treatment, if any is necessary, in removal of the abnormal bone.

ARTHUR ROBINSON.

FARR (C. B.) **Bilateral Cervical Rib, with symptoms of pressure on the Brachial Plesus.** *American Medicine*, New Series, Vol. ii., No. 5.

THE case described by Dr. Farr is that of a female, aged 31 years, who had noticed numbness in her arms since her 18th year. The numbness had increased in intensity and was accompanied by aching and tingling. The tingling was limited to the ulnar side of the right arm, but it was more general in the left arm and in the latter is was accompanied at times by hyperæsthesia. The diagnosis suggested by the symptoms was confirmed by palpation and photography.

ARTHUR ROBINSON.

Therapeutics.

CUNNINGHAM (J. H.) **Treatment of Prostatic Hypertrophy.** *Boston Med. and Surg. Journ.*, 1907, Nos. 19 and 20.

THE various methods, palliative and radical, are considered in relation to their mortality, and details given of 24 cases of median perineal prostatectomy. The writer has had considerable experience of the suprapubic method, but has decided in favour of the median perineal operation as a radical procedure, because of the lower mortality, equally good functional results, and equal or greater rapidity. The figures of 190 cases, including the writer's, yield an average mortality of 4·7 per cent. for the perineal operation, as compared with 7·3 per cent. quoted as Freyer's recent figure. Of the writer's cases none died from the operation, the only death occurring three months after operation from septic phlebitis of the leg; all the others were still alive at the time of writing, and in none was the operation more recent than four months. All except one have control, this case having required a second operation for stricture due to neglect to pass sounds after the operation. Two cases required a second operation, the one just referred to, and another for recurrent stone-formation and obstruction due to a small hypertrophied anterior commissure which had been left behind, and which, he thinks, might have been discovered if it had been possible to cystoscope before the operation. In one case the gland weighed over ½ lb., and the writer believes that mere size offers no limit to the perineal route. The longest time required was 12 minutes, the shortest 1½, and the average period of etherisation was less than 15. Hæmorrhage occurred in three cases, in one soon after operation, in another three days after, following action of the bowels, in the third severe hæmorrhage began on the tenth day without known cause. Epididymitis occurred in six cases, but never went on to suppuration. A recto-urethral fistula formed in one case, probably from passage of hard fæces several days after operation, aided by prolonged drainage with a hard tube.

He ascribes the absence of mortality to (1) preliminary cystoscopic examination and testing the kidney function with phloridzin, subjecting cases below a certain standard to the Bottini operation; (2) very short etherisation and rapid operation, and (3) encouraging the patient to live as nearly as possible his normal life during convalescence.

The technique is described in detail. Removal should be done by "morcellement" to avoid damage to the compressor urethræ. If but little cystitis be present drainage should be discontinued in from 24 to 48 hours, otherwise siphon drainage and irrigation should be employed, by the perineum when cystitis is marked, by urethral catheter when mild. Sounds should be passed from the meatus, beginning one

week after all drainage has been removed, at intervals of three or four days until the perineal wound is entirely healed and no evidence of constriction can be detected.

G. R. Mill.

Morton (E. R.) **On the value of the High-frequency Spark as a local application.** *Lancet*, June 1, 1907.

The writer deals with some of the uses of the high frequency spark as a local application. He maintains that it is "a most valuable form of local stimulant which seems to have properties peculiarly its own and one the action of which is under perfect control in the hands of a person accustomed to its use." Any degree of stimulation from an erythema to vesication may be produced, but the ease or difficulty of producing these effects varies in individuals to a very great extent. In alopecia areata he finds that good results follow only in those cases in which an erythema is readily produced, and cites the case of a medical man in which he obtained a perfect result when all other forms of treatment had failed after a very extensive trial. The "cure" seems to be permanent, 2½ years having elapsed since treatment ceased. Acne vulgaris likewise yields, but recurrences occur. He states that a mild dose readily gets rid of recurrences.

In the treatment of "port-wine" marks the stimulation is carried to the point of vesication. When the inflammation subsides the mark is very much paler and in the very superficial cases disappears after one treatment. He states that there is no scarring and the skin becomes perfectly normal.

A. E. Barclay.

Reviews.

"Inflammation: an Introduction to the Study of Pathology." By J. George Adami, M.A., M.D., F.R.S. Pp. xii., 240. MacMillan & Co. Price 5s. net.

This is a reprint of the author's article in "Allbutt's System of Medicine," rendered more complete and up-to-date by some additional matter. The whole will serve as a most lucid and valuable introduction to the study of Pathology.

The initial difficulty of such an article lies in the definition, but about this we would prefer not to be too exacting lest the outlook be narrowed. The author, regarding inflammation as "the local attempt at repair of actual or referred injury," starts, with Metchnikoff, at the bottom of the animal kingdom, and discusses the comparative pathology, leading us by easy stages to the more complicated inflammatory process in the higher animals. Then he discusses in some detail the various phenomena met with in inflammation and the part played by the different tissues—the leucocytes, fluids, vascular and nervous systems, and the tissue cells themselves,—carrying the description as far as the regenerative process and to the stage of fibrous hyperplasia of inflammatory origin. Repeatedly he stops to summarize, and always bases speculation on well founded fact and experiment, the numerous authorities for which are given in a useful appendix. The conclusions bear the impress of the author's personality and discrimination. Not being biassed by the responsibility of a theory of his own he acts as an intermediary, and, modifying Metchnikoff's view of the all-powerful phagocytes in the light of the more recent researches of the supporters of the humoral hypothesis, attributes—as we think, correctly—to both the cells and the body fluids a share in the defence of the system. A useful schema of the cells associated with inflammation considerably simplifies a matter which has become unnecessarily complicated by a prolific nomenclature. Not losing sight of the ultimate aim of pathology, the author, in a chapter on the general principles of treatment, applies the views propounded, and includes Bier's treatment by induced hyperæmia. The most interesting concluding chapter on Adaptation might well serve as an introduction to the broader subject of generalised response to irritants which some would include in a definition of inflammation.

On p. 115, line 12, *cells* is apparently a misprint for *bacteria*.

The fact that an almost chaotic mass of experimental work and theory has been reduced to so orderly a state and so logical a sequence supports the author's prefatory exhortation as to the necessity and utility of stopping periodically to sift and arrange the ever increasing mass of data arising from pathological research.

"Chemical Pathology." By H. Gideon Wells. Pp. 549. Philadelphia and London: W. B. Saunders & Co., 1907. Price 15s. net.

There are many works on Morbid Histology and Morbid Anatomy but few on Chemical Pathology. Hence this book helps to fill a serious gap in the medical library. It is a text-book of Pathology from its chemical and physico-chemical aspects, and will prove useful to the student and to the advanced worker. Practical details and methods are not given, the author confining himself to a description of the chemical and physical processes concerned in pathology. The sources from which he draws are taken from all countries and are supported, in many instances, by his own observations.

The main thesis of the author is the importance of enzyme action in normal and pathological processes. The enzymes mostly concerned are the intracellular autolytic enzymes. The actions of these enzymes are supposed to be reversible, the changes occurring in the direction either of anabolism or of katabolism, according to circumstances, and always tending towards a position of equilibrium. Thus the action of *Lipase* tends towards a condition of equilibrium in which fat, fatty acids, and glycerine are present together in certain proportions. If the fatty acids and glycerine are removed by diffusion the enzyme acts katabolically, splitting up the fat into its constituents, while if more fatty acids and glycerine are supplied, synthesis takes place by the reversed action of the enzyme and more fat is built up. Normally, the anabolic and the katabolic processes are taking place simultaneously and "all metabolism may be considered as a continuous attempt at establishment of equilibrium by enzymes, perpetuated by prevention of attainment of actual equilibrium through destruction of some of the participating substances by oxidation or other chemical processes, or by removal from the cell, or entrance into it of materials which overbalance one side of the equation" (p. 68). Each enzyme is specific, acting only on one substance or group of substances. These intracellular enzymes, if the supply of nutriment is cut off as in death, will continue to act in the direction of katabolism, thus giving rise to the phenomena of autolysis. During life the tissues are protected from the autolytic action partly by the constant supply of nutriment, partly by the presence of specific anti-enzymes, and partly by the alkaline reaction of the tissues and body fluids, these enzymes acting best in a faintly acid medium. In the case of *catalase* we are informed that the tissues contain, not only the catalase and anti-catalase, but also a substance which protects the catalase from its antibody!

In view of the importance attached to enzyme action we should like to have more convincing proof of the reversible nature of this action more especially in respect to the proteolytic enzymes.

Apart from enzyme action great stress is laid on the importance of osmosis. The cell is conceived as a mass of colloid matter surrounded by a slightly differentiated cell membrane which probably contains considerable quantities of lipoid substances such as lecithin and cholesterin

through which osmosis can take place. No experimental evidence is, however, submitted with regard to the properties of membranes formed by these lipoid substances.

There is a fair account of the chemistry of bacteria, and their products and of immunity, and the various antibodies, also of animal parasites and of plant and animal poisons. In connexion with the latter we are informed that scorpions bite!

The most interesting feature in the chapter on inflammation is the account of the surface tension theory of chemiotaxis. Amoeboid movements are ascribed to alterations in surface tension, and are compared with the movements of a drop of clove oil suspended in a mixture of alcohol and glycerine. Such a drop will put out pseudopodia on the side on which the surface tension is lowest, and will also exhibit phenomena akin to phagocytosis. The emigration of the leucocytes is thus explained: The substances produced at the focus of injury or infection act by lowering the surface tension of the surrounding fluid. As they diffuse into the capillaries they produce a lowering of surface tension at the point of entry which will induce the leucocytes to throw out pseudopodia in that direction and eventually to pass through the vessel wall towards the focus, always moving towards the place where the products of the damaged tissues are in greatest amount, and therefore the surface tension of the fluids is lowest.

It is difficult to believe that this is a satisfactory explanation of chemiotaxis. If amoeboid movements depend solely on surface tension, how is it that the polymorphonuclear leucocytes are attracted in so much greater numbers than the other leucocytes? and how is it that the erythrocytes do not exhibit amoeboid movements since they are subject to similar alterations in surface tension? Also, how is to be explained the fact that in some acute inflammations there is little or no exudation of leucocytes and, why are bile salts and some other substances which lower surface tension not chemiotactic?

In the chapter on the Blood, we regret to notice that the valuable work on blood volume by Haldane and Lorrain Smith is dismissed in a footnote of two lines! No account of their work is given and, in particular, no mention is made of the application of their method to the explanation of the pathology of the anæmias. Hence the fact that the essential feature in chlorosis is increased blood volume and not diminished hæmoglobin formation, is not even suggested.

There are good discussions on the chemical pathology of œdema, the degenerations, calculus formation, tumours, etc., and the book finishes with an account of metabolic conditions, auto-intoxications, and the ductless glands.

We have great pleasure in recommending this book. It is interesting to read and contains numerous suggestive ideas. The references are numerous but not excessive, and the reader is referred to recent works in which the complete literature of any subject can be found. We should have liked to see a more connected account of such subjects as the chemistry of nerve degeneration and the urine. There is also no

account of variations in the gastric juice and other digestive secretions.

The author is not always happy in his choice of terms. Thus we find *glycos*-uria but *hyperglyc*-æmia, and we have *glyco*-lysis for destruction of sugar, while *glyco*-genesis is used as implying formation of *glycogen*.

"Manual of Midwifery." By W. E. Fothergill, MA., B.Sc., M.D. Fourth edition; pp. 448. Edinburgh and London: William Green & Sons, 1907. Price 9s. net.

Dr. Fothergill's admirable manual, which has now reached its fourth edition, is too well known and justly appreciated to call for any lengthy notice here. The text has been thoroughly revised, and partly rewritten, and is now fully up-to-date. No better student's book could well be desired, and even the established practitioner will probably learn a good deal from its careful perusal. Where the general level of excellence is so high it is difficult to single out special parts for commendation, but the chapter on the sectional anatomy of labour, the descriptions of the various obstetrical operations, and the references to the toxæmia of pregnancy, to eclampsia, and to puerperal infection may be practically noted.

What strikes us as the least efficient part of the book is that dealing with the treatment of post-partum hæmorrhage; true the author admits that "serious post-partum hæmorrhage is practically never seen in hospitals, nor do consulting obstetricians see it in private," hence, although he mentions compression of the abdominal aorta as recommended by Bishop, he still adheres to the time-honoured but disaster-inviting teaching of the text-books.

"Hay-Fever, Hay-Asthma." By William Lloyd, F.R.C.S., etc. PP. 95. London: Henry J. Glaisher, 1907. Price 3s. 6d. net.

This little work gives a very fair presentation of our knowledge of and therapeutic resources in this troublesome and perennially recurring affection. There can be little doubt that the pollen, chiefly of the graminaceæ, are the exciting cause of the symptoms. Dunbar succeeded in isolating a toxin which is capable of inducing attacks in susceptible people, and he also prepared an antitoxin which was effectual in alleviating attacks in a number of instances. The chief predisposing factor appears to be a hypersensitive condition of the mucous membrane, *i.e.*, a neurosis. True and "pseudo" types of hay-fever are distinguished, the latter occurring independently of pollen. The author gives clear directions for detecting the hypersensitive areas in the nose. The treatment he considers most effectual is cauterisation of the hypersensitive areas. Until we read this book we were not aware that the nose was a perspiratory (*sic*) organ. The results of antitoxin treatment have not been as satisfactory as anticipated.

"The Drink Problem in its Medico-sociological Aspects by fourteen Medical Authorities." Edited by T. N. Kelynack, M.D., M.R.C.P., London: Methuen & Co. Price 7s. 6d. net.

ANYTHING which helps to bring home to the British public the national importance of the Drink Problem deserves grateful recognition. This volume, which aims at the presentation of the subject with scientific accuracy, and yet in popular form, by medical experts, will prove a valuable addition to the library of the worker in this department. Though dealing with the problem from so many different standpoints, the excellent index makes it at once available as a book of reference. The headings of the chapters will best indicate its scope. After an introductory statement of the problem by the Editor we find the following articles—The Evolution of the Alcoholic, by Dr. Harry Campbell; The Pathology of Alcoholism, by Prof. G. Sims Woodhead; The Psychology of the Alcoholic, by Dr. T. Claye Shaw; Alcoholism and Mental Disease, by Dr. T. B. Hyslop; Medico-legal Relations of Alcoholism, by S. B. Atkinson, M.A., M.B., etc., Barrister-at-law; Alcohol and Public Health, by Dr. Arthur Newsholme; Alcohol and Life Assurance, by W. McAdam Eccles, M.S., F.R.C.S.; Alcoholism in Relation to Women and Children, by Mrs. Scharlieb, M.D., M.S.; The Criminology of Alcoholism, by Dr. W. C. Sullivan, Medical Officer H.M. Prison Service; Alcoholism and Pauperism, by Dr. R. H. Crowley; The Teaching of Temperance, by Dr. E. Claude Taylor; Alcohol and National Deterioration, by Dr. Robert Jones; Alcoholism and Legislation, by V. H. Rutherford, M.B., M.P., etc.; closing with a chapter on the Arrest of Alcoholism, by the editor, Dr. T. N. Kellynack.

This enumeration demonstrates at once the impossibility of criticising the book in detail. Of late years there has been a tendency to make the inebriate too much of an interesting medical problem and too little of a responsible citizen. We believe there was more than a spice of truth in Dr. Bucknill's work on "Habitual Drunkenness," written in the seventies, and that the pendulum has swung too far away from his standpoint. On the whole the articles in this volume strike a happy mean, and the variety in authorship entails the representation of the different shades of opinion. Moreover, the Drink Problem is not narrowed down to the problem of Drunkenness, and Dr. Robert Jones, when discussing the "upper section of the working classes," in whose case "it is computed that fully one-fourth of the weekly wages go in drink," rightly states that their "poverty results far more frequently from 'drinking habits' than from actual drunkenness—which seems to suggest that the best working hypothesis for temperance is total abstinence." We are glad to note that the Editor, in his closing article, warns philanthropic people against the patronage of "loudly lauded 'cures' for intemperance," most of which are justly characterized by H.M. Inspector of Retreats as "commercial frauds." The late Sir Wm. Roberts, many years ago, when addressing a gathering of medical students, said: "To make a correct therapeutic observation is one of

the most difficult things in medicine—I suppose you regard it as one of the easiest." Would that such words of wisdom might be taken to heart by those good people who are tempted to advocate the latest secret remedy advertised for Alcoholism. We should like to quote right and left from this volume, but we must leave those interested in the subject to read it for themselves.

"Tics and their Treatment." By Henry Meige and E. Feindel, with a Preface by Prof. Brissaud. Translated and edited, with a critical Appendix, by S. A. K. Wilson, M.A., M.B., B.Sc., Resident Medical Officer for the Paralysed and Epileptic, Queen's Square, London. Pp. 386. London: Sidney Appleton, 1907. Price 9s. net.

First impressions are not always to be relied on. On opening this work for the first time, one is inclined to ask, what are tics, that they should be worth a book and 386 pages! But a closer acquaintance with its contents dispel first impressions, and one is struck with the fact that there is much more to be said about tics than one at first dreamed, and moreover, not only true tics, but the many functional maladies allied to the tics, present much that is interesting and important to the neurologist.

A tic in the language of the out-patient, stands for a swollen face and a sleepless night. Needless to say that the tics of our authors do not include *tic doloreux*, but consist in movements which in their origin were purposive, but later degenerated into bad habits. Thus an eyelid tic is started by a movement which is voluntary and directed to a useful end, but the blinking movement remains long after any irritation present in the conjunctivæ has subsided, as a queer nervous habit.

The preface contributed by Prof. Brissaud clears the ground a good deal as to what ought to be included under the term tic, inasmuch as there are many tic-like movements which are not tics. He says: "It is evident we are dealing here not with a simple reflex of bulbar origin, but with a movement at once premeditated and purposive, and it is this purposive element, presupposing as it does, co-ordination of contraction, that indicates the *cortical* nature of the phenomenon. Such co-ordinated movements, however causeless and inopportune they may appear, cannot be identified with mere pathological reflexes or spasms. They are tics" . . . . "in these cases examination always reveals insufficiency of inhibition to which are due the inception and persistence of so many bad habits."

In sharp contrast to the tics, the authors describe "spasm" as the motor reaction consequent on a pathological stimulation of some point in a reflex *spinal* or *bulbo-spinal* arc.

It is clear that if the above definitions are kept in mind, chorea, athetosis, hemitremor, convulsions and spasms are not tics. Movements that are wanton and wasteful and erratic in origin cannot be included. Yet it must be admitted that in chorea, we at times see purposive move-

ments as in rapid and repeated blinking. Neither would our author include "mannerisms," "stereotyped acts," "gestures," though they would appear to be included, if we accept his definition. Nor do the authors admit that many bad habits seen during early life, such as thumb-sucking, tongue-sucking, head-shaking, head-banging, are tics. They relate how "Charcot used to twist his hair round his index finger so intricately that one day a lock of hair had actually to be cut off. It was a trick of his not a tic!"

The mental condition of tic subjects come in necessarily for consideration, as it is clear that pscychical abnormalities are often associated with tics. It may be doubted if any child or adult that suffers from tic is an individual of average nervous stability, but the difficulty comes when a tic is the only evidence. There must, however, be some abnormal failure of inhibition, the average individual would have the sense and the strength of will to check the twitching movements in an early stage, before they had become ingrained and purely automatic. The individual is usually a fidget, highly sensitive, and perhaps if a child, is out of health and growing fast.

The authors think that among the category of "superior degenerates" will be found the vast majority of sufferers from tic. Such individuals may be highly musical, quick brained, ingenious, belong to the class of geniuses, but some of their other faculties are poorly developed. They fail in self restraint, are readily influenced by others, and perhaps lack moral sense. There is, when years of discretion are reached, a mental infantilism, in spite of many highly developed characters.

Tics of the milder type are common among children in this country, affecting face, head and neck, nose and shoulders, etc. Such children are highly strung and neurotic, and probably more or less out of health. By far the majority get well with attention to their general health, and when placed under suitable conditions. Their tics are, however, very apt to relapse.

The authors give much space to a description of the different tics, for their number is legion. There are face tics, chin tics, nose tics, eye tics, and so on *ad finitum*. Tics of speech are among the most interesting, the authors include the "ahem," "ahem," which the nervous orator interlards so freely between his sentences, the habit starting from some laryngeal or pharyngeal irritation. They exclude stammering.

It is not possible to follow the writers through their chapters devoted to the evolution, complications, diagnosis, and prognosis of tics; the chapters on treatment are very suggestive and complete.

The book is a valuable contribution to the subject, and is long likely to remain a standard work. There is a very complete bibliography. A word of praise is due to the editor and translator.

THE MEDICAL CHRONICLE.

A MONTHLY RECORD OF THE

Progress of Medical Science.

OCCULT HÆMORRHAGE IN THE GASTRO-INTESTINAL TRACT.*

By Ernest Bosdin Leech, M.A., M.D., B.C. (Cantab.), M.R.C.P. (London), M.R.C.S. (Eng.), D.P.H. (Manch.), *Resident Medical Officer, Royal Infirmary, Manchester.*

(*Continued from page 305.*)

I have analysed the results which have been published, and will describe them under the following headings:—

A. Carcinoma.
B. Non-malignant ulceration.
C. Gastritis.
D. Cirrhosis and other liver diseases.
E. Acute intestinal inflammations.
F. Pancreas.
G. Blood diseases.
H. Various other diseases not of the alimentary canal.
I. Neurosis.

The following table gives some idea of the amount of work which has been done by various authors who publish their figures:

	Number Examined.	Stools or Gastric Contents.
Boas and Kochmann ...	257 ...	—
Hartmann	— ...	1000
Joachim	— ...	450
Koriczkowsky	— ...	300
Steele and Butt	100 ...	—
Tileston	68 ...	—
Jaworski and Korolewicz	72 ...	790

A. Carcinoma.

i. Œsophagus.

Joachim [26] found occult blood in 18 cases, none in 1 case. It was usually slight and fairly constant, rarely visible. Jaworski and Korolewicz found that of three ulcerated cases, blood was present in one and absent in two.

* A Thesis awarded the Degree of M.D. (Cantab.).

ii. Stomach.

In no series of examinations except in the case of neurosis, is opinion so unanimous as it is in carcinoma of the stomach. The following table shows what a small number of the cases fail to show the presence of blood:—

	Patients Examined.	Positive Results.	Negative Results.	Stools or Gastric Contents Examined.	Positive Results.	Negative Results.	Remarks.
Boas	20	20	—	—	—	—	
Boas and Kochmann	67	65	2	—	—	—	Results coincide for stools and test meals. Generally no suspicion macroscopically.
Strauss	1	1	—	—	—	—	Gives positive in stools but not in test meal.
Hartmann	17	—	—	210	205	5	
Boas	124	106	18	—	—	—	Present in 86 per cent. of examinations.
Steele and Butt	6	—	—	11	11	—	
Ewald	—	—	—	—	—	—	Does not think blood so frequent as is generally maintained.
Mathieu and Roux	14	12	1	—	—	—	Only two examinations of the negative case in which the growth was at the cardia.
Oettinger and Girault	12	11	1	—	—	—	The one negative case was in a young man.
Friedenwahl and Rosenthal	23	—	—	—	—	—	Rarely absent; constant in 19.
Jaworski and Korolewicz	8	8	—	—	—	—	Only absent in one single stool of these eight cases, but in test meal of four cases it was twice positive and twice negative.

Intestine.

I find no records concerning cases of growth of the small intestine. Hæmorrhage does not seem to be so common in growths of the large intestine as of the stomach. Though many writers mention this fact, none give an adequate explanation.

Boas and Kochmann [4] report three cases, in two of which the results varied, while the third was always positive. Hartmann [21] made 38 examinations in three cases, apparently all with positive results. Strauss [65] reports that a case of carcinoma of the ascend-

ing colon showed blood continuously. Boas in 1905 says that in 27 cases he only found hæmorrhage in six. Ewald [15] says that in one case where there was no hæmorrhage laparotomy revealed a tumour of the sigmoid. Mathieu and Roux got positive results frequently in one case.

B. Non-malignant ulceration.

i. Gastric ulcer.

The table given below bears out the statement of Boas that hæmorrhage, though frequent, is not constant. It is generally considered that if frequent examinations are made blood will be found at some time or other in nearly every case during the acute stage.

	Patients Examined.	Positive Results.	Negative Results.	Stools or Gastric Contents Examined.	Positive Results.	Negative Results.	Remarks.
Boas	10	—	—	—	—	—	Variable results.
Boas and Kochmann	12	—	—	—	—	—	Five cases showed blood both in stools and in gastric contents.
Hartmann	26	26	—	436	—	—	Blood in all cases, but sometimes only after examinations for several weeks.
Joachim	28	—	—	—	—	—	In 38 per cent. of these. Not regularly, and often visible. No premonitory hæmorrhages found.
Boas	—	—	—	—	—	—	In 50 per cent. of cases examined.
Steele and Butt	9	—	—	122	—	—	Blood intermittent but not invariable. Commonly present at intervals of two or more days.
Siegel	—	—	—	—	—	—	In 74 per cent. of cases, sometimes when no pain.
Mathieu and Roux	14	9	5	—	—	—	
Oettinger and Girault	17	17	—	—	—	—	In all, but not at every examination.
Friedenwahl and Rosenthal	35	26	9	—	—	—	Not at every test.

ii. Duodenal ulcer.

As one might expect the results for this, though few in number, are similar to those obtained for gastric ulcer.

Boas and Kochmann quote two cases, one of which always gave negative results. The other gave positive three times and negative results nine times.

iii. Ectasis of the stomach of non-malignant origin.

Boas, in his original article, says that in one case of hypertrophic stenosis, and in one of stenosis the result of duodenal ulcer, he obtained positive results, while in three cases of simple dilatation his results were always negative.

Later, in his paper with Kochmann he emphasises the fact that in non-malignant gastrectasis the presence of blood depends largely on the power of the stomach to empty itself; where a residue is left hæmorrhage occurs due to small erosions, and the more completely this residue is expelled owing to increased motor power the less chance is there of hæmorrhage. He now says that in six cases of spastic pyloric stenosis his results are variable. The same variation is also found in six cases of simple dilatation.

Hartmann,[21] with 63 tests performed on five cases of benign obstruction, arrives at the same conclusion, that the more perfect the motility the less frequent is the hæmorrhage.

iv. Tubercular ulceration.

Joachim [26] found no hæmorrhage in this disease; Boas [9] sometimes in two cases. In these cases, however, he did not obtain a post-mortem examination to confirm his diagnosis. Steele and Butt, on the other hand, report that in one case which they tested ten times, blood was present on all occasions.

One can therefore say that in some cases, at any rate, there is a striking absence of blood in tubercular enteritis.

v. Typhoid ulceration.

Several writers, chiefly in Italy, have studied carefully the value of occult hæmorrhage in enteric fever. The value of small as forerunners of severe hæmorrhages have been especially investigated.

Occult hæmorrhage is not so common as one might expect, and is of little help in foretelling gross hæmorrhage. The discrepancy in the views of the different writers is very marked.

	Patients Examined.	Positive Results.	Negative Results.	Stools or Gastric Contents Examined.	Positive Results.	Negative Results.	Remarks.
Joachim	6	2	4	—	—	—	One case gave warning the day before a severe hæmorrhage.
Tedeschi	24	3	21	—	—	—	Never hæmorrhage in first two weeks. One case gave occult blood for three successive days followed by a gross hæmorrhage.
Zuccola	23	23	—	—	—	—	Daily examinations, hæmorrhages usually end of first and beginning of second week, some positive as late as 38th day.
Petracchi	18	8	10	—	—	—	Examinations made every second day. Regards rise of pulse-rate with occult hæmorrhage as important means of foretelling severe hæmorrhage. In half of the cases gross hæmorrhage followed traces.
Steele and Butt	19	3	16	92	3	89	All positive reactions were in the third week. None of the three patients with occult had also visible hæmorrhage. These figures are included in Steele's later results.
Cattaneo	3	1	2	—	—	—	In another case there was occult hæmorrhage for twelve days after severe bleeding.
Romani	—	—	—	—	—	—	Claims that occult always precedes gross hæmorrhage.
Tileston	68	18	50	422	10%	90%	Most found in fourth week. No prognostic value with regard to gross hæmorrhage.
Steele	49	15	34	239	32	207	Of the fifteen patients six had visible bleeding.

C. Gastritis.

i. Gastritis Anacida; Achylia Gastrica.

With the exception of Kuttner (and no actual figures are given by him), it is unanimously agreed that hæmorrhage does not occur in achylia gastrica. It is this bleeding from minute abrasions which Boas ascribes not to the diminution of H Cl, but to the stasis of food which may occur in this disease.

	Patients Examined.	Positive Results.	Negative Results.	Stools or Gastric Contents Examined.	Positive Results.	Negative Results.	Remarks.
Boas	14	1	13	—	—	—	
Boas and Kochmann	56	—	56	—	—	—	
Kuttner	—	—	—	—	—	—	Disagrees with Boas and says that hæmorrhage does occur in achylia gastrica.
Hartmann	9	—	9	78	—	78	
Steele and Butt	—	—	—	—	—	—	Negative in many cases.
Schloss	20	—	—	194	6	188	Four of the positive results were in one case where gastric ulcer was possible.
Friedenwahl and Rosenthal	47	—	47	92	—	92	

ii. Hyperacity and Hypersecretion.

Here again the results are constantly negative.

	Patients Examined.	Positive Results.	Negative Results.	Stools or Gastric Contents Examined.	Positive Results.	Negative Results.	Remarks.
Boas	15	—	15	—	—	—	
Boas and Kochmann	43	—	43	—	—	—	
Hartmann	3	—	3	19	—	19	
Oettinger and Girault	—	—	—	—	—	—	Blood sometimes in hyperacidity, possibly from ulcerations. Blood occurred in 28 out of 50 examinations of two cases of gastro-succorrhœa.
Friedenwahl and Rosenthal	50	—	50	129	—	129	

D. Cirrhosis and other liver diseases.

Joachim [26] lays stress on the fact that he finds no blood in cases of liver cirrhosis. Steele and Butt, on the other hand examined two cases, both of which had blood. They consider that the presence of occult hæmorrhage is of but little value in the diagnosis of this disease; in fact it is more likely to hinder diagnosis than to help it. Ewald also considers that liver cirrhosis presents great difficulty.

Joachim says that in catarrhal jaundice hæmorrhages occur at the height of the illness.

E. Acute intestinal inflammation.

But little work has been done on this subject. Blood was found to be constantly present by Joachim in a case of acute mercury poisoning. In perityphilitis his results were negative.

F. Pancreas.

Joachim found that the stools of one patient with carcinoma of the head of the pancreas, accompanied by icterus, gave a regular negative reaction. In a case of hæmorrhagic pancreatitis the test was positive.

G. Blood diseases.

The results published on this subject are scanty, in spite of the difficulty that occurs at times in distinguishing a primary anæmia from one due to an intestinal growth.

Chlorosis.—Rossel states that no blood is found. Siegel says that he found blood in 16 per cent. of cases, but he is not sure in how many of these his diagnosis was correct.

Pernicious Anæmia.—Steele and Butt in one case obtained negative reactions, and suggest that this test may help in the differential diagnosis of cancer.

Purpura.—In one case with marked symptoms these last writers obtained positive reactions in five consecutive stools.

H. Various diseases apart from the alimentary canal.

Hæmorrhages occur in heart failure so long as venous back pressure exists, but disappear with recovery (Joachim).

In pneumonia Steele and Butt made 34 examinations in twelve cases, only getting positive results twice, both in an early stage,

and in all probability the result of sputum swallowed. In phthisis they made ten tests in two cases; all were negative.

I. Neurosis.

Without exception every writer is of opinion that no hæmorrhage is ever found in neurosis. Boas quotes 17 cases, Hartmann 10 cases with 133 examinations, Steele and Butt two examinations, Friedenwahl and Rosenthal 57 examinations in 27 cases, all with the above-mentioned result. Oettinger and Girault also agree.

10. Therapeutic application of these tests.

Schloss and others have attempted to gauge the therapeutic action of bismuth by determining to what extent it stops hæmorrhage in gastric ulcer. They come to the conclusion that it causes hæmorrhage to cease very rapidly, but does this by forming a layer which prevents irritation, and not by actually causing the ulcer to heal. For they find that on bismuth being withdrawn a quick relapse takes place.

Boas claims that with the help of this test dietetic treatment may be made purposive. So long as blood persists light diet or rectal feeding must be continued, and a return of blood with increased diet signifies that the change has been made too soon.

11. Diagnostic value of occult hæmorrhage.

From the time of his earliest paper Boas has laid stress on the fact that no absolute diagnosis, either positive or negative, can be made by this method of examination, but he, in the same way as nearly every writer, considers that in certain digestive diseases a knowledge as to the presence or absence of blood forms one of the most valuable corner-stones in building up a diagnosis.

Schmilinsky [53] believes that this work is the greatest advance in modern stomach work.

Ewald [15] alone remains sceptical.

All agree that a single examination is of but little value, and that the worth of the tests depends on a series of examinations.

Generally it is considered that the greatest value is in gastric carcinoma. If other symptoms point the same way, then the presence of occult hæmorrhage, varied perhaps occasionally with visible blood strongly favours carcinoma. The value here is both positive and negative. Continued presence of blood supports a

diagnosis of carcinoma. The constant or frequent absence is strongly against it. Disappearance of the blood reaction in a doubtful case is against malignancy. The value of the tests becomes apparent if they are carried out at the same time as test meals, for while, on the one hand, free acidity is diminished to disappearance both in carcinoma and in achylia gastrica, on the other hand blood is constantly present in the former and as constantly absent in the latter.

But the work that has yet been done in respect to the value of this test in early carcinoma is disappointingly scanty

Few of the writers signify at what stage in the course of the cases they were testing the suspicion of cancer was changed to a definite diagnosis, and whether the tests carried out helped in the formation of that diagnosis or were merely confirmatory. One may assume that blood only appears when ulceration occurs, but clinical medicine and pathology do not show us at what stage ulceration does occur.

The general opinion as to the presence of blood from gastric ulcer is almost as uniform, but the diagnostic value is much less. At first blood may be present in large quantities, especially in cases where there has been hæmatemesis, then only in occult traces; after this it is likely to disappear for days or weeks. A slight recurrence is frequent, sometimes on change of diet either with or without increased symptoms; then comes a further period without blood, and this may persist till the patient leaves hospital, or a further relapse may occur. The value of the test here is a negative one. Too many conditions cause irregular hæmorrhage for a certain "yes" or "no" to be given on the presence of occasional blood. Between carcinoma and ulcer the test is of great value, for this condition gives irregular, while that gives constant bleeding. Between gastric ulcer and neurosis the test is scarcely less useful, for in the latter even the irregular hæmorrhage does not occur. But between gastric ulcer and many other conditions, as cirrhosis and non-malignant dilatation, the test has little or no worth. Clemm [11] says that in gastric ulcer, of which the diagnosis of half the cases is uncertain, occult blood can give the casting vote, and so prevent the diagnosis of neurosis ending in fatal profuse hæmorrhage.

Digestive neuroses never cause bleeding. The persistent absence of blood, therefore, is suggestive in a person in whom neurasthenic pain is suspected. In dyspepsia, due to decreased or increased acidity, but without motor insufficiency, hæmorrhage does not occur.

In dilatation of the stomach, whether from atony of the walls or from non-malignant stricture, in carcinoma of the large intestine, in tubercular and typhoid ulceration, the irregular presence of blood which occurs is only of value in so far that it shows that a breach of surface is present.

There is little support to the statement applied especially to typhoid, that minute hæmorrhage precedes gross hæmorrhage and so gives a warning useful both in prognosis and treatment.

PERSONAL WORK.

1. Methods.

Having carefully surveyed the literature on the subject of occult hæmorrhage, and bearing in mind the fact that tests to be of use must be simple, I was soon able to set aside as inapplicable many of the methods which have been suggested for the detection of blood. Heller's test and tests depending on the formation of crystals are almost universally considered inappropriate, and I have spent but little time in their study. The spectroscope has more supporters. In Munich it is apparently still used in controlling colour tests, but the necessity of an instrument which is so costly and calls for so much skill, restricts its use to the laboratory. Apart then from a few preliminary experiments which rapidly showed me how badly the spectroscope compares, in unskilled hands at any rate, with colour tests, I have not used this instrument in my work. Colour tests seem to me to have the following advantage over other methods in point of delicacy of reaction, that each individual unit of blood acts over and over again in oxidising the guaiacum, for it is oxidised and reduced many times in succession, while in a spectroscopic examination each unit has only single value.

Having therefore come to the conclusion that colour tests are far preferable to other methods of examination, I worked in the first place with guaiacum and aloin; later I used benzidin also,

and in each case I tried various modifications of the methods suggested. I cannot agree with those writers who recommend the use of guaiacum and aloin in the same case in order that one may control the other, or with others who suggest a colour test combined with a spectroscopic test. If single tests are not accurate enough then the method of examination for occult blood is of no clinical value. I therefore made it my object, while using several different methods in the earlier cases examined, to eliminate those which proved least satisfactory till I decided on that which was the most reliable and the easiest to perform. I found this to be the benzidin test carried out much in the manner suggested by Schumm and Westphal. In my later cases I have used, and in my future examinations I propose to use this method exclusively. I give below my reasons for this decision, as well as those for the adoption of the acetic acid and ether extraction in preference to other modes of preliminary preparation. Where in any case the results of the different methods vary, I have accepted that given by this procedure, which I finally adopted.

The amount of stool or gastric contents necessary for examination is very small. Solid material the size of a hazelnut, or a corresponding quantity of fluid material is amply sufficient. As I have conducted my experiments over a mile from the hospital where my cases were, the conditions are very similar to what one might expect in general practice. For collection and carriage I found Delf stoneware ointment pots with closely fitting metal lids, lined on the outside with celluloid, to be very satisfactory. The two ounce size (*squat* shape) are the best. These I obtained, at the advice of Messrs. Mottershead. They effectually prevent the escape of effluvia, and are so well made as not to require any great amount of care in carriage. I found small tin boxes, into which four of these pots fitted side by side, to be the best receptacle in which to carry them.

In the case of many specimens I made note, before examination, of any appearance suggesting blood, and soon began to realise that many of the stools, especially in cancer cases, sent down as free from blood contained in reality large quantities. The brown colour of a bismuth stool is easily distinguished; the black colour when iron has been given is more apt to lead to error. In cases of gastric

ulcer which I have examined there has never been a recurrence of gross hæmorrhage without the occurrence of hæmatemesis at the same time, but occult hæmorrhages have occurred in several cases in the quiescent period.

As regards preliminary preparation I have tried both the acetic ether extraction and the boiling method. The latter I have used only with benzidin; I therefore describe it in my account of that reagent; but for reasons given below I find that it is not so satisfactory as the acetic ether method. For this latter I take a small portion of the material to be examined, about the size of a pea, and break it up with about 2 cc. of water in a mortar. I then pour this into a test tube and add about half its volume of glacial acetic acid. Next I stopper with an indiarubber cork and shake thoroughly. After allowing the mixture to stand for a few minutes I add ether so as to fill up the test tube three-quarters full, and having again corked I invert about 20 or 30 times slowly. This process mixes the ether with the material without forming an emulsion. After standing for a few seconds the ether rises to the top, more or less deeply stained (if stools are used) with yellow or brown fæcal pigment. With this yellow ether and acetic acid extract I carry out one of the colour tests.

Where blood is present the acetate of hæmatin gives to the ethereal solution a colour varying from brown to pink, easily recognisable when the occurs in large quantity. To determine the value of this colour I noted in each case its apparent presence or absence, with the idea of avoiding further trouble if this visual test proved reliable. I was, however, disappointed, for the greenish brown colour of urobilin masks small amounts, while in a few cases a tint, which I took to be definite, was shown by the various colour tests to be due to some other substance than blood.

In several cases I made a preliminary extraction of some of the fat by shaking with several volumes of ether. In others I dried the stools and then extracted the fat in a Soxhlet's apparatus before proceeding. But I found that these methods, while adding materially to the expense and time, did not make any apparent difference in my results. Fat does not seem to oxidise any of the colour reagents. Many writers give instructions as to how an emulsion of ether and water during the extraction of the hæmatin acetate

can be avoided. The number of cases in which such an emulsion has troubled me is very small. If a relatively large amount of ether be used, namely, in the proportion given above, and if the tube be reversed without shaking, an emulsion occurs but rarely; if it does occur then more ether should be added, for this extracts pigments from the emulsion, when the tube is reversed as above, while it remains clear itself.

My methods of using aloin and guaiacum are so similar that one description will suffice for both tests. In both cases I like to make up a tincture of the drug rather than to dissolve the solid in the ethereal solution; for I find that, as a matter of convenience, where several tests are to be done consecutively, the process of adding a few grains of solid material is a slower one than that of pouring in a few cubic centimetres of a solution. The results of the two methods however seem to be the same. A tincture of the aloin or guaiacum is made by adding as much of the drug as will rest on a threepenny piece to a test tube full of rectified spirits. Then to 2 or 3 cc. of the acetic acid and ether extract, prepared as detailed above, I add 1 cc. of this tincture and 20 drops of turpentine, which has been kept in an unstoppered bottle.

Aloin.—In the case of aloin a red colour develops in half a minute to a minute, though sometimes more slowly. Where blood is plentiful this is very characteristic, but where the extract is already deeply pigmented, and where blood is present only in small quantities, the discrimination between positive and negative reactions is very difficult. The red colour when developed persists for several hours; in this aloin has the advantage over guaiacum; but on the other hand, a rich red colour may develop after several hours where no blood is present. After using this test in my preliminary work and in 80 of the earlier examinations, which I describe in this thesis, I arrived at the conclusion that it was inferior both to guaiacum and benzidin, and therefore discarded it.

Guaiacum.—I used this reagent during the greater part of my investigations side by side with benzidin, but finally gave it up for various reasons. In the presence of abundance of blood a rapid colour change of the mixture takes place through grey to blue, often nearly to black. This colour persists for hours and then changes to brown. But where little blood is present the

change is less definite, the solution becomes green, then green blue, then light blue or violet. This colour fades in a few minutes, sometimes even in a single minute. The rapid change of colour which occurs constitutes a serious drawback to this test; for where several tests are being done simultaneously it is easy for some to be forgotten for a few minutes, and the worker is then uncertain whether a blue colour has developed in the meantime or not. Much has been written concerning the difficulties caused by the presence of urobilin. Instead of changing to blue or violet the mixture may go no further than a green blue, or there may be only a change of tint of the green. I have found that the semi-failure does not depend entirely on the small amount of blood present. In the case of a person on diet of underdone meat in whose stools there was excess of urobilin, I found that aloin and benzidin constantly gave marked reactions, while guaiacum gave negative results, that is if they were interpreted on the strict rules laid down by most writers. I have in this way found the test uncertain and fickle. At the same time acceptance of slight, but nevertheless quite definite, changes of colour even where blue is not reached cause the results to correspond fairly closely to those of aloin and benzidin. But a test that depends so much on the individual is not satisfactory. In many cases I obtained no blue colour at the first attempt, but on repeating the test got a more satisfactory result, when I varied the proportions of the reagents to a slight extent. But I was never able to determine beforehand the exact proportions that were necessary of each ingredient, and for this reason I finally discarded guaiacum in favour of benzidin. In working with both aloin and guaiacum I generally used turpentine as the oxygen carrier, but did not find it so satisfactory as hydrogen peroxide, which I used in my later tests; the latter is more certain and more cleanly.

Benzidin.—I have carried out the benzidin test in two ways. In most of my experiments I used Seifert and Müller's method of extraction, but in order to simplify, if possible, the preliminary work, I made many trials of the boiling method as revived by Schlesinger and Holst. My two procedures are as follows:—

(1) Extraction with Acetic Acid and Ether.—I made a tincture of benzidin by dissolving a few grains of the powder in a test tube

full of rectified spirits. It does not seem to me necessary that the solution should be saturated or that heat should be used in this process, for benzidin is fairly soluble in alcohol in the cold. Then to about two inches of the acetic acid and ether extract in a test tube, prepared as already described, I add about half an inch of glacial acetic acid, one inch of the benzidin tincture, and one inch of liquor hydrogenii peroxidi. Then, after shaking the test tube, stoppered with an indiarubber cork, I pour out a few drops on to a white slab. When a large amount of blood is present the mixture becomes thick and blue black in a few seconds. Where only a small amount is present it remains thin and gradually darkens, assuming a green and blue colour in a few minutes. I find this plate method much more satisfactory in judging fine reactions than that of gauging the colour in a test tube. The colour certainly does fade, but not for a quarter of an hour. It then passes to a brown. The necessity for clean apparatus becomes apparent with a reaction so fine as this, when as sometimes may happen, a blue colour appears either at some dirty spot on the slab or at the edge of the test tube, if this has not been thoroughly cleaned.

(2) Boiling method.—In this process I have followed Schlesinger and Holst's recommendations fairly closely. A portion of the stool about the size of a pea is placed in a test tube which is filled a quarter full of water, and the whole shaken and brought to the boil in a flame. In another test tube a strong solution of benzidin is made in glacial acetic acid, in the proportion of a few grains of benzidin to about 2 cc. of the acid. Then in a third test tube half an inch of this benzidin solution is mixed with one inch of a 3 per cent. solution of hydrogen peroxide. Any blue colour at this stage shows that there is some fallacy either from impure drugs or from dirty test tubes. A few drops of the fæcal solution is then added to this mixture. If blood be present a blue colour develops. The advantage of the boiling method cannot be gainsaid as far as simplicity is concerned; but after many tests done in both ways, I felt myself compelled to adopt the more laborious ether extraction method. The fact that boiling is of no value in the presence of free iron is not of great importance, for iron as a drug can easily be dropped while the tests are being made; but in many cases the mixture becomes slate grey in colour, so that it is difficult

to state whether the reaction is positive or negative. In a few cases where I did not suspect blood, and where the ether method gave negative results, a rich blue colour appeared. Seeing that the reaction depends on the destruction by boiling of all oxydases present, one cannot be surprised at occasional erroneous results; for with boiling the turbid mixture froths up rapidly, and some of the froth probably never reaches the necessary temperature; on the other hand, prolonged boiling is likely, as shown below, to destroy blood pigment. In many of my cases I found dark blue granules mixed with lighter coloured fluid. Perhaps these granules had escaped the requisite heat. To control the boiling method each test which I did was carried out with the stools both boiled and unboiled. In many cases there was a marked difference; generally the boiled gave less oxidation, but in others there was more colour with the boiled than the unboiled. This I could not explain. My results with ether extraction were more definite and more satisfactory.

The principal objection to the benzidin test is that it is too fine, that is to say, the reaction is given by insignificant quantities of blood. Perhaps there is some truth in this, but there is a great satisfaction in having an absolutely definite reaction, however slight it be. Very minute traces can be neglected at will without the personal judgment being introduced that plays so large a part in the guaiacum test, or even in Schlesinger and Holst's method. For urobilin creates no difficulty in the case of benzidin. An important drawback of this drug is that different samples vary much in activity. Some give a minute reaction, while others are negative. I am now working with a preparation of Merck, which does not give a reaction so easily as some of unknown origin with which I commenced my work. It is therefore necessary to know the sample which is in use; if it is very active, the finest reactions may be neglected.

In using benzidin great care should be taken that none of the material touches the hands, as the blue colour stains the skin deeply, and is by no means easy to remove. To avoid this staining I use well fitting indiarubber corks, and a plentiful supply of water in which to wash the outside of the tubes. Unless care be taken the

smell of the acetic acid and ether extract clings to the fingers, and is distinctly unpleasant.

I myself have had no difficulty in deciding whether the examination of stools or of vomit is of most use in diagnosis; for having soon found that single examinations are of but little value, I was obliged to examine stools in order to obtain the constant information with regard to the state of the intestine, which I alone found of use. Vomiting is infrequent; repeated test meals are out of the question; I have nevertheless examined these as opportunity presented. I have not found in practise that urine interferes with the test, nor do I understand theoretically how it can do so. I have tested iron mixed artificially with the stools, and find that, after a preliminary ether and acetic acid extraction, there is absolutely no reaction.

While testing the stools of patients I have at various times made tests with various food stuffs supplied to the patients at the Manchester Royal Infirmary, as well as with various body products. The following are the results of these tests:—

Beef tea, negative.

Fish, negative.

Chicken (white flesh), negative or slight positive.

Chop (well done), marked positive.

After digestion of small pieces of meat with liquor pancreaticus, I found—

Chicken, negative.

Chop, positive.

From these results I gather that beef tea, fish, and chicken can be given as food without risk of vitiating results. Meat, however, even if well done, might at times cause fallacies, and I have therefore only examined the stools of patients on the above limited diet. As beef tea and broth do not give any reaction, it is evident that hæmoglobin, if boiled thoroughly enough, is broken up in such a way as no longer to act as blood. This is of importance in view of Schlesinger and Holst's boiling method. If the boiling be thorough there is a risk of destroying the hæmoglobin; if not, then the oxydases may survive.

In the stools of one normal person feeding on underdone meat, which I examined twenty-two times, I obtained seventeen positive reactions, of which many were very slight, and none were very marked.

With potato, pus, saliva, and milk tested after the acetic acid and ether extraction, I got negative results with all the colour reagents. In the case of oatmeal the ether extract was not clear, and a marked guaiacum reaction was given, but none with benzidin. As however the ether extract is in all cases clear when stools are used, and as I rely on benzidin, this possible fallacy is more apparent than real.

2. Results.

I have examined in all 320 stools from 78 different patients. Most of these were suffering from digestive disease. In a few cases of anæmia tests have been made to determine what part hæmorrhage plays in causing the anæmia. Soon after commencing this work I began to realise that its greatest value lay in the diagnosis of carcinoma of the stomach, and so it is to doubtful cases of this disease that I have devoted my chief attention. While enormous advances have been made in the surgery of the abdomen during the last few years, little has been done in the earlier diagnosis of some of the more important diseases found there. The surgeons are asking for earlier cases of gastric carcinoma on which to operate; but beyond the aid given by test meals—and these are scarcely available for the general practitioner—no great advance has been made in the determination of the disease at an early stage.

The want of a certain diagnosis has compelled me to omit some of my later cases from the tables which I have drawn up. In fact some of the most interesting cases which I am watching are still *sub judice*.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
1. Œsophagus.				
Case 60—W. D.	Typical cachexia and obstruction. Blocking of œsophagus shown by *x*-rays with bismuth; gross hæmorrhage twice.	4	3	1
2 Stomach.				
Case 3—T. C.	Operation	1	0	1
Case 12—C. H.	Lump abdomen. Retro-sternal glands. Vomiting.	7	7	0
Case 14—J. S.....	P. M. examination	2	1	1
Case 15—C. W.	Tumour; wasting commenced after these examinations.	10	10	0
Case 26—E. T.	Tumour. Abdominal distension; lost weight. No P. M.	4	3	1
Case 27—A. H.	Operation	17	17	0
Case 45—W. Y.	P. M. examination	5	5	0
Case 20—S. C.	Tumour. Difficulty in passing stomach tube. Growth probably at cardiac end.	10	10	0
3. Large intestine.				
Case 3—J. W.	Tumour felt in iliac region, probably cæcum. Cachexia.	3	0	3
Case 9—G. R.	Cæcum. P. M.	4	2	2
Case 11—S. J.....	Rectum; felt digitally	1	1	0
Case 28—T. C.	Carcinoma ileo-cæcal junction. Operation.	4	4	0
4. Pancreas.				
Case 34—D. A.	P. M. examination. Death due to ulceration to the duodenum with sudden gross hæmorrhage.	3	2	1
Case 68—G. H.	Operation. Severe pain not connected with food; no vomiting.	4	0	4

On the whole these results agree very closely with those of other writers. Hæmorrhage is present in nearly every test on every case. Especially is this noticeable in stomach growths. Here all except three out of fifty six examinations were positive. In some cases,

of course, the nature of the disease was recognised before the examinations were made; in others the results helped in the diagnosis; in others again the presence of occult hæmorrhage pointed to malignancy, while other symptoms were strongly against it. Thus in Case 27 an operation was performed and a growth was disclosed in a person supposed—in spite of seventeen consecutive positive reactions—to be suffering from gastric ulcer. Case 45 was supposed to have tubercular masses in the abdomen; five stool examinations were all positive; at the *post-mortem* a growth of the hinder wall of the stomach was found. In Case 15 a test breakfast in which there was excess of acid tended to lead one astray, while the presence of blood in each of ten stools showed itself eventually to be the truer guide. In some cases, and noticeably in Case 27, the gross and occult hæmorrhage were intermingled.

On the other hand I must mention two cases which I have now placed under hepatic cirrhosis, where the results were positive as frequently as in these cases. I consider liver cirrhosis to be the disease most likely to cause error in this method of diagnosis.

These tests are evidently of less value in growths of the large intestine; here nearly half my reactions are negative. Perhaps this is due to the fact that any blood which exudes from a gastric carcinoma is intimately mixed with the fluid contents, while that shed into the large intestine spreads over the surface of a portion only of the fæces; thus, some of the material which is entirely free from blood may be picked out for examination. My result in the one case of œsophageal carcinoma which I report is what might be expected in a growth in such an exposed position. In Case 68 (growth of the pancreas) an exploratory incision was made into the abdominal cavity, as a tumour had been felt in the pyloric region. No gastric tumour was found; this, the absence of occult hæmorrhage and of pain after food led me to expect.

B. Non-malignant ulceration.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
1. Gastric ulcer.				
(*a*) Where carcinoma suspected.				
Case 17—A. B.	Pyloric obstruction; judged to be malignant by subsequent history.	8	2	6
Case 30—S. K.	Dyspepsia and vomiting; first thought to be malignant owing to age; recovery.	6	2	4
Case 36—J. K.	Dilated stomach, obstructive. Perforation later to posterior mediastinum. *Vide B.M.J.*, Feb. 23, 1907, p. 435.	6	3	3
Case 50—M. P.	Chronic ulcer. Carcinoma not absolutely excluded when patient left hospital.	3	2	1
Case 18—M. H.	Seven weeks' history of pain. Sudden death; probably from shock on perforation.	4	0	4
(*b*) Other cases.				
Case 6—M. Y.	History hæmatemesis; frequent vomiting	2	0	2
Case 16—N. C.	Pains after food; vomiting once pure blood.	1	0	1
Case 21—A. C.	Slight hæmatemesis	1	0	1
Case 22—J. B.	Vomiting and history of hæmatemesis; found to be pregnant.	1	1	0
Case 29—A. B.	History of hæmatemesis	3	1	2
Case 35—L. D.	Vomiting; gastric ulcer type; doubtful hæmatemesis.	2	1	1
Case 39—E. H.	Pain and hæmatemesis	1	0	1
Case 41—J. H.	Pain after meals; 3 years' history	2	2	0
Case 49—M. F.	History of hæmatemesis	3	1	2
Case 70—T. H.	History of pain; dilated stomach	1	1	0
I add the following interesting case.				
Case 38—E. I.....	Profuse hæmatemesis visible in stools for 3 or 4 days after admission. Tests done as soon as blood ceased to be visible. Last test showed only minute trace. No pain at all at time of hæmorrhage. Similar attack 3 years ago.	4	4	0

2. Duodenal ulcer.				
Case 4—P. P.	Admitted as doubtful perforated gastric ulcer. Death from peritonitis. Perforated ulcer of duodenum found.	2	0	2
Case 43—J. S.	Pain 2 or 3 hours after food; hyperchlorhydria; improvement 3 months later.	7	3	4
3. Tuberculous ulceration.				
Case 15—C. J.....	Diarrhœa one month; phthisis marked. At P. M. two very small ulcers found; one of these perforated.	6	0	6
Case 40—E. B.	Lump in right iliac region found on operation to be ileo-cæcal tuberculosis. These positive results helped in diagnosing intestinal trouble. The patient also had cystinuria.	8	7	1

The difficulty caused by uncertain diagnosis, which presents itself in the drawing up of statistics, is even more marked in the case of ulcer than in carcinoma. But this uncertainty is of less importance in that less value is claimed for the test in gastric ulcer. In some cases it can give us help in diagnosis from carcinoma; in others it may be useful in directing treatment and determining the length of stay in bed. I have therefore divided my cases in two classes; the first includes those where carcinoma was suspected, the second comprises the rest. A comparison of the first class with the results in cancer shows that here 50 per cent. of the examinations are negative, while in malignant disease of the stomach only 5 to 6 per cent. are negative. Here hæmorrhage is intermittent, there it is nearly constant. In the cases of the second class, where difficulty of diagnosis arose it was between gastric ulcer and gastritis; then of course occult hæmorrhage favours ulcer. Case 38 seems to be one of so-called gastrostaxis. The hæmorrhage both in vomit and stools was profuse for several days and then diminished gradually; there was no pain in this or in previous attack to point to ulcer.

One would expect occult hæmorrhage to occur in duodenal as in gastric ulcer, and the two results I give, though insufficient to prove, help to bear this out.

Both the cases of tubercular ulceration which I have tested are of especial interest. Case 15 was a man with advanced phthisis in whom marked tubercular ulceration was suspected

owing to the great diarrhœa. But no blood was found. *Post-mortem* only two minute ulcerations were found in the intestine. This case, which was one of the earliest examined by me, impressed me with the accuracy of the test, for I felt sure during the patient's life that marked ulceration must be present. I was surprised after death to find the explanation of the absence of blood. According to most writers tubercular ulcers of the intestine bleed but little. Case 40 had a lump the size of a tangerine orange in the right iliac fossa, irregular diarrhœa, pus in the urine on some occasions and cystin on others. The improvement during a lengthy stay on the medical side convinced me that the disease was non-malignant, while the presence of blood pointed to some intestinal lesion. The surgeons discovered a large ileo-caecal tubercular mass.

I have had no opportunity of forming an opinion based on personal experience of the value of occult hæmorrhage in typhoid fever. The question has been well worked out in Italy and in America, and the value seems to be small.

C. Gastritis, etc.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
1. Gastritis.				
Case 8—G. R.	Bilious attacks	5	0	5
Case 47—E. B.	Gastritis after eating chipped potatoes...	1	0	1
Case 53—A. W.	Bilious attacks; very doubtful hæmatemesis.	3	2 very slight	1
Case 57—S. O.	Marked hyperchlorhydria; thought not to be gastric ulcer owing to relief of pain with food.	4	2	2
2. Diarrhœa; odd cases.				
Case 7—J. M.	Alcoholic—admitted after a drinking bout.	2	1	1
Case 13—W. B.	Thought to be tuberculous on admission or possibly malignant; probably due to starvation and bad food.	8	0	8

I fear that the class "gastritis" is but vague when compared with the division given by foreign writers according to the amount of free H Cl present. I simply include cases of dyspepsia where there is thought to be no ulcer. The first two cases, in which no question of ulcer was raised, gave only negative results; the last two where the diagnosis was more doubtful gave mixed results. I can afford but little help in settling the question of occasional hæmorrhage where no ulcer exists.

In Case 7 the blood found in the earlier examination was probably due to food taken before admission. In Case 13 the absence of blood was in accordance with the final diagnosis of toxic diarrhœa.

D. Cirrhosis of Liver.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
Case 5—G. E.	Traveller; large liver; very anæmic; thought to have carcinoma; no further loss of weight four months later.	8	8	0
		First admission		
Case 2—T. R.	Elderly anæmic man; in hospital Aug.-Oct., 1906, and Mar.-Apl., 1907; no loss of weight between admissions.	11	11	0
		Second admission		
		5	1	4

Case 5 I certainly took to be malignant. The blood was always in large amount, though never visible to the naked eye; the anæmia was marked. He said that he had lost 35 lbs. weight. In hospital he put on flesh; when I saw him four months later, the anæmia was still intense, there was no further loss of weight, and the general condition was good. I am still unable to exclude malignancy absolutely, but when I take into account the patient's trade, history of alcoholism, and enlarged liver, I believe that he is suffering from cirrhosis. The blood count negatives pernicious anæmia.

Case 2 also seemed to be malignant. The persistence of anæmia and the gain of weight are much like the previous case. The history of alcoholism is not so strong. The frequent absence of blood when the patient was in hospital for a second time is interesting.

These cases impressed the fact on me that however useful in the diagnosis of cancer of the stomach, the knowledge of constant occult hæmorrhage may be, still, this constant hæmorrhage is not in itself diagnostic of that disease.

E. Anæmia.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
1. Chlorosis.				
Case 25—E. M.	Typical case—meat diet	2	2	0
Case 33—C. H.	Type of anæmia not quite definite	1	0	1
2. Pernicious anæmia.				
Case 37—G. H.	Meat diet whole time	10	4	6
3. Splenic anæmia.				
Case 32—E. G.	Meat diet	14	6	8

These figures help to show, firstly, that even if well cooked hospital meat does produce blood in the stools, it does so only occasionally; secondly, that the drain of blood in these cases can only have been comparatively slight, and that the continued anæmia is not due entirely to leakage of blood but to some other cause. Two of the four positive reactions in Case 37 and four of the six in Case 32 were very slight.

F. Neurosis, etc.

	Remarks and Ground for Diagnosis.	Number of Examinations.	Positive Results.	Negative Results.
1. Neurosis.				
Case 31—W. T.	Gastric pains apparently neurotic; former operation for supposed gastric ulcer; no ulceration found.	4	0	4
Case 44—L. B.	Pains in abdomen; lax abdominal wall; albuminuria.	1	0	1
Case 48—A. B.	Typically neurasthenic, but possibility of gastric ulcer.	4	1 trace	3
Case 59—D. L.	Patient with general pains and history of many illnesses.	1	1 trace	0
2. Movable kidney.				
Case 69—F. S.	Operation. Previously thought to be carcinoma of stomach.	1	0	1

3. Summary.

1. As the result of this research, I believe that the examination for occult hæmorrhage, as recommended by Weber and Boas, is the most useful of recent additions to our methods of diagnosis of digestive disease.

2. Single examinations are of little value. The worth of the test depends on the continued absence, irregular appearance, or constant appearance of blood.

3. Though a knowledge is useful concerning the presence of blood in gastric contents (either as vomit or as the result of test breakfast), the stools alone are available for the constant examinations which are necessary.

4. Occult hæmorrhage arises generally from ulcerated surfaces, but not necessarily so, for it may arise from engorged veins and congested mucous membranes.

5. The presence or absence of blood is not of itself diagnostic of any single disease. It is when considered with other symptions that this method of examination becomes of value.

6. The chief value of the test lies in the diagnosis of carcinoma of the stomach. Here blood is present in nearly every stool of every case examined. I am unable to say how early in the disease hæmorrhage occurs. In other diseases it does not occur with a corresponding regularity. Cirrhosis of the liver is the disease most likely to cause confusion.

7. In digestive neurosis and diseases of other organs which do not cause changes of the stomach or intestines, hæmorrhage is not likely to occur.

8. In carcinoma of the intestine, gastric ulcer, tubercular ulcer, and typhoid, hæmorrhage is irregular. The test is of value in these diseases in so far as they may be mistaken for carcinoma of the stomach on the one hand, and for neurosis or diseases of other systems on the other.

9. While tests are being carried out, red meat, cooked or uncooked should be avoided, as some of the blood from this may appear in the stools. Chicken, fish, broth, and vegetable diets cause no error. This limitation of diet affords but little hardship as most patients to be tested are digestive cases.

10. The colour tests for blood are alone available for clinical work.

11. Owing to substances other than blood which oxidise the colour reagents, some preliminary preparation of the material is necessary. Extraction by means of acetic acid and ether seems to me the most satisfactory method.

12. I perform the test, which can be done in five minutes, in the following manner:—A portion of the stool, the size of a hazelnut, is broken up with about 2 cc. of water in a mortar. This is placed in a test tube. Half its volume of glacial acetic acid is added and the whole is shaken thoroughly. Then the test tube is nearly filled with ether, and is carefully reversed twenty or thirty times. In this way hæmatin acetate is extracted and an emulsion is avoided. To about one inch of this resulting translucent yellow ethereal solution are added (1) a few drops of glacial acetic acid, (2) one inch of solution of benzidin in rectified spirits, (3) one inch of liquor hydrogenii peroxidi. The mixture is shaken and a few drops are poured on to a white porcelain slab. Blood present even in minute quantities causes a blue colour to appear.

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CHRONICLE.

Medicine.

Scheel (O.) **Arterial Measurements and Arteriosclerosis.** *Norsk Mag. for Laegevidenskaben*, 1907, p. 662.

In a series of about 500 autopsies the author has observed the occurrence and distribution of any arterio-sclerosis present, and has made measurements of the inner perimeter of certain of the arteries. The arteries were removed from the body and opened, their inner circumferences being then measured on the flat; the aorta and pulmonary arteries were measured 1 cm. above the valves, the thoracic aorta at the level of the origin of the uppermost inter-costal arteries, and the abdominal aorta just above the origin of the cœliac artery. The length of the aorta, from the origin of the uppermost inter-costals to its bifurcation, was also measured before removing the vessel from the body and afterwards; the difference between these two measurements gives the retractility of the aorta. The measurements of diameter thus obtained do not, of course, give the actual diameter of the vessels during life. Post mortem, the vessel will shrink, partly from its elasticity, partly too, perhaps, from the rigor mortis into which its unstriped muscle passes. Thus Fuchs (1902) found that in certain animals the diameter of the aorta, measured during life, had lessened by from 5 to 12 per cent. twelve hours after death.

Scheel has tabulated, and also put into the form of curves, the results of his measurements; figures are given for males and females separately above the age of 16, and the different decades of life are similarly separated. Other things being equal, the arterial diameters are always greater in men than in women, and all the diameters show a surprisingly regular increase with advancing years. Some of the average perimeters, measured in cm. as and where described above, are reproduced here:—

Age.	Ascending Aorta.		Pulmonary Artery.		Thoracic Aorta.		Abdominal Aorta.	
	Men.	Women.	Men.	Women.	Men.	Women.	Men.	Women.
71-80	9·2 (23)	8·5 (25)	8·2 (19)	7·7 (17)	7·2 (26)	6·9 (26)	6·3 (26)	6·0 (26)
61-70	8·6 (32)	7·9 (27)	7·7 (27)	7·6 (23)	6·7 (32)	6·4 (27)	6·0 (32)	5·5 (27)
51-60	8·1 (43)	7·5 (27)	7·4 (40)	7·3 (26)	6·3 (43)	5·6 (27)	5·5 (43)	5·1 (28)
41-50	7·6 (34)	6·8 (39)	7·3 (33)	7·1 (35)	5·7 (35)	5·3 (39)	5·0 (35)	4·6 (39)
31-40	6·7 (35)	6·2 (25)	6·9 (34)	6·8 (23)	5·2 (35)	4·9 (26)	4·6 (35)	4·2 (26)
21-30	6·2 (32)	5·7 (20)	6·8 (30)	6·4 (23)	4·8 (33)	4·4 (27)	4·2 (33)	3·7 (27)
16-20	5·8 (18)	5·6 (15)	6·3 (18)	6·0 (14)	4·5 (18)	4·1 (16)	3·7 (18)	3·6 (15)
11-15	4·9 (14)		5·5 (14)		3·8 (15)		3·2 (14)	
1-2	3·7 (11)		3·8 (11)		2·7 (11)		2·3 (11)	
Under 1	2·5 (18)		2·9 (18)		1·9 (18)		1·7 (18)	
Under 0	1·7 (20)		2·1 (20)		1·4 (20)		1·3 (20)	

The figures in brackets represent the numbers of cases averaged to give the measurements. In cases of morbus cordis the measurements

are naturally altered somewhat; for example, in aortic reflux the aorta is abnormally wide, in mitral reflux or stenosis it is the pulmonary artery that is dilated. Scheel discusses the influence of various diseases on these arterial diameters; the retractility of the aorta increases moderately up to the age of 16—20, and after that falls off regularly, practically vanishing at 70. He holds that the increase of the arterial lumen and the decrease of its retractility with age depend solely upon the loss of elasticity of the arterial wall, and are normal processes due to the continued action of the blood-pressure. The individual variations in the measurements of any given age-group are considerable, and Scheel thinks that they cannot be explained simply by variations in the individual blood-pressures.

As regards the influence of arterio-sclerosis on the widening of the vessels, Scheel remarks that elongated streaks or dots of fatty degeneration are common in the aortic intima between the ages of 11 and 30, and are rare after 50. Slight longitudinal folds appear in the aortic intima at 20, increase with age, and generally disappear at 70 or so. Small isolated raised arterio-sclerotic plaques appear at about 30, increasing in number and size with age, and becoming calcareous and very well marked at 70. Arterio-sclerosis, like the progressive dilatation of the arteries, is the natural consequence of the action of the arterial blood-pressure on the arterial wall for longer or shorter periods of time; in general, Scheel supports Thoma's view of its production. The widening and loss of elasticity are steps in the same process that later leads to arterio-sclerosis. A. J. Jex-Blake.

Schott (T.) **Chronic Muscular Diseases of the Heart.** *New York Med. Journ.*, May 11, 1907.

The paper embodies some further experience of the Nauheim treatment, a vindication of its value in suitable cases, and a caution regarding its employment in others where the contra-indications laid down by the authors have not been duly observed. The cases are illustratd by radiographic and sphygmographic records.

Influenza has now to be reckoned amongst the numerous causes of myocardial disease. As regards fatty changes, special importance attaches, as shown by Koehl, Romberg and others, to the fatty degeneration resulting from disturbances of compensation in valvular diseases. As to such toxic causes as alcohol, gout and chronic renal disease, the question whether the primary lesion be valvular or muscular is still undecided. Regarding the vexed question of over-exertion in the production of cardiac disease, Schott takes the affirmative side as the outcome of his observations on the healthy human subject, confirmed by the experiments of Zuntz on animals. Other causes operate in the different age-periods—senile changes, excesses in middle life, the climacteric in women, and even in youth grave conditions may result from too rapid growth or vicious habits. Heredity often plays a predominant part.

Whatever the cause, the final result in all cases is muscular insuffi-

ciency. The prognosis must be based upon a careful consideration of each case. The treatment must be directed to the condition of the cardiac muscle. Among drugs, digitalis is still unrivalled in compensational disturbances, but must be used with discrimination. As regards the iodides, the writer has pointed out certain dangers attending the use of halogen salts in fatty heart, and thyreoidin has given rise to dangerous symptoms. More favourable results are obtained with iodine in the cardio-muscular changes in Graves' disease, and especially in angina; the sodium salt is to be preferred.

Physical methods include mechanical and dietetic measures and baths. As regards diet, undue stringency is to be deprecated as useless and even dangerous, and in fatty heart a too energetic reduction of weight is fraught with danger to the nutrition of the cardiac muscle. Nor is there any occasion for restriction of fluids. Recent experiments have shown that the amount of water in the blood is not increased in chronic heart disease, and that, in the absence of renal complications, it tends rather to be below the normal. Mechanical treatment is used in three different forms. Of these the climbing exercises of Oertel are adapted only to a limited number of cases, and are most effective in the fatty heart of young subjects. In the fatty heart of later life they are dangerous, especially in complicated cases, and should only be used when the heart muscle has already gained sufficient strength through other means. The Zander treatment by machinery has the disadvantages of great cost, necessity of medical supervision and lack of ready adaptability to individual requirements. In Schott's method the resistance is given either by an operator or by the antagonistic muscles of the patient himself. This method, with or without the effervescent saline baths, has steadily increased in favour, but harmful results have occurred where the cases have not been selected with a regard to the specified contra-indications. These are principally cases in which even a temporary rise of intra-cardial pressure, such as is caused by the use of baths or gymnastics, must be avoided, *e.g.*, aneurysm of the heart or great vessels, cases in which apoplexy or embolism is to be feared, and advanced arterio-sclerosis. In recent years he has employed radiography and orthodiagraphy to show the effects of baths and exercises on the heart. He considers the change of contour more important than the absolute size, and this change can also be detected by percussion. In one case a gouty subject with dilatation of both ventricles, commencing muscle degeneration and angina pectoris, an attack of angina came on during the *x*-ray examination, and the skiagram showed well the condition during the attck, viz., dilatation of the left ventricle and markedly of the auricle. After twenty minutes of exercises against very mild resistance, another plate showed a distinct change in the size and contour of the left heart shadow. The case was under observation for one and a half years, during which he underwent two courses of baths and gymnastics at Nauheim, and continued the resistance movements during the winter. He had a slight anginal attack after a long bicycle tour, but otherwise could walk for hours on the level and climb moderately without any discomfort.

In selecting cases for this treatment the absolute height of the blood-pressure is no positive indication, for an abnormally high pressure may reduce markedly under the treatment. It is necessary to take account of the whole condition, and especially of the pathological state of the heart. His experience suggests the following as a reliable test: After a mild brine bath (1 to 1½ per cent.) at 93°—95°F. for 5—8 minutes, or after gymnastic exercises with slight resistance, the heart, after perhaps a passing acceleration, beats more quietly and strongly, with fuller pulse and easier respiration. If these results are obtained and the treatment slowly and prudently continued, success may be looked for even in long-standing cases of muscular disease of the heart.

G. R. Mill.

Snow (I. M.) **Primary Intestinal Tuberculosis in a Nursing Baby.** *Archives of Pediatrics*, April, 1907.

A child, born of healthy parents, was nursed by the mother and throve for two months. The other child, aged one year, was taken ill a month after the birth of the second, and died after six days' illness with diarrhœa of a dysenteric character, high temperature and terminal convulsions. This illness, judging from later events, was probably tuberculous. After two months the infant developed slight irregular fever which continued for two weeks without interfering with nutrition. No explanation could be found; the breast milk was analysed and found good, and treatment directed to the intestinal tract was without effect. The general state was good and there were no physical signs except occasional internal strabismus. All functions were normal, and the blood showed only slight secondary anæmia. For the next fortnight fever continued without apparent detriment. A few small papules appeared on the trunk and limbs, which a dermatologist regarded as characteristic of congenital syphilis. Pyrexia continued, more papules and pustules appeared, and the child began to exhibit cough and respiratory distress without signs in throat or chest. The spleen began to enlarge in spite of antisyphilitic treatment. The stools were still normal six weeks after the beginning of the illness. Respiratory symptoms increased and broncho-pneumonia developed at the right base and left apex. There were occasional vomiting and frequent stools. A provisional diagnosis of tuberculosis was now made. The spleen enlarged to the umbilicus, melæna and hæmatemesis developed, and death occurred from intestinal hæmorrhage after an illness of nine weeks' duration.

The autopsy showed miliary tuberculosis of the lungs, spleen and skin, caseous bronchial and mesenteric gland, tuberculous ulceration of the ileum over a circular area eight inches above the valve, and a small ulcer at the greater curvature of the stomach. Notable features were the absence of intestinal symptoms for six weeks and the absence of emaciation in spite of extensive caseation of the mesenteric glands. The mother's milk showed no tubercle bacilli and was innocuous to guinea-pigs. The problem presented was that of the development of

tubercle in a nursing infant of healthy parentage in which the avenue of infection and the primary lesion were in the intestinal tract. The source of infection was eventually traced to the nurse who attended the confinement and remained for a month while in poor health and suffering from cough. Subsequently bacilli were found in her sputum and tuberculous lesions in her lungs. He concludes that the nurse infected both children by prolonged personal contact, the elder dying rapidly of acute tuberculosis, the other of general miliary tubercle secondary to a primary intestinal lesion.

Similar cases of infection of infants by tuberculous nurses are cited from the literature, and the question of the primary lesion in infantile tuberculosis discussed. He insists, in conclusion, upon the danger to infants of a tuberculous environment. G. R. Mill.

Croom (H.) **Exophthalmic Goitre in its Relation to Obstetrics and Gynæcology.** *Edin. Med. Journ.*, 1907, p. 393.

Whilst exophthalmic goitre is a comparatively frequent disorder of women, and the thyroid is enlarged during pregnancy, exophthalmic goitre and pregnancy are a very rare combination, as shown by the fact that out of 15,000 cases seen by him, the writer has not met with one in hospital practice, and with only twelve in private and consulting practice. The influence of pregnancy upon exophthalmic goitre is very uncertain, but in the majority of cases it aggravates it. On the other hand, the effect of exophthalmic goitre on pregnancy is practically nil; and so far as Croom's observations and those collated by him from other sources abroad go to prove, most pregnancies complicated with exophthalmic goitre follow a regular even course; and of the accidents that may occur, the most frequent is hæmorrhage, and occasionally abortion. The relation between pelvic disease and exophthalmic goitre is rare, and the effect of exophthalmic goitre on the reproductive system is in recent cases to cause irregular menstruation, mostly in the direction of menorrhagia, while in very advanced cases it may cause amenorrhœa. From these conclusions it must be apparent therefore (1) that girls suffering from exophthalmic goitre need not be precluded from marrying; (2) that after marriage they need not be precluded from pregnancy; (3) that if pregnancy occurs there is no reason, except in advanced cases, to interrupt the pregnancy, even in spite of the fact that the children of women with exophthalmic goitre may be expected, according to some authorities, to develop neuropathic manifestations. E. M. Brockbank.

Fraley (F.) **A Study of Five Hundred Cases of Pleurisy occurring at the Pennsylvania Hospital.** *American Journ. of Med. Science*, 1907, p. 686.

The patients upon whom this report is based were admitted to the Pennsylvania Hospital from the years 1896 to 1905, the five-hundredth case being completed with the end of October, 1905, thus covering

almost exactly a decade. In this series only inflammatory conditions of the pleura have been included, the transudates, such as at times occur in cardiac and renal disease, are not considered. So, also, cases of chronic thickened pleura without symptoms or physical signs (other than impaired percussion note or diminished breath sounds) were deemed outside the limits of this report.

Vital Statistics. In children males and females are equally liable to the disease, but after fifteen years of age, at which time their modes of life begin to differ, men are affected four times as frequently as women. Regarding age, over one-third of the cases occurred in the decade between twenty and thirty years, and almost three-fifths were between twenty and forty. The ages were very variable, the youngest affected being but eleven months old, while at the other extreme of life two persons contracted pleurisy at the age of seventy-two.

Empyema. The tendency to pus formation appears to be much more marked in the young, and steadily decreases in later life. It may be of interest to note that in the ages from twenty to forty, through which period tuberculosis is most frequent, the empyema ratio is comparatively low. Men are affected three times as frequently as women, and here again the third decade of life furnishes the greatest number of cases, though not nearly in such marked degree as in the non-purulent cases.

Regarding the rôle which *alcoholism* is supposed to play in the predisposition to disease, 102 of the 500 cases gave a distinct history of habitual indulgence in, or of excessive addiction to, alcohol.

Past Medical History. One hundred and forty-eight of the patients gave a history of previous pulmonary trouble. Fifty-three had had pneumonia, forty pleurisy and eighteen influenza previously. A rheumatic history was obtained in 46 cases, and 22 cases admitted specific disease; the latter proportion, it may be presumed, falling decidedly short of the actual number of syphilitics among the series. Of the acute infections only those occurring within the previous six months are admitted as having any bearing on the subject.

Exciting causes. The most common causes were: exposure to cold, dampness or sudden chilling, 65; following acute or subacute bronchitis, 42; following croupous pneumonia (of which 48 were empyemas), 52; following traumatism (principally falls, broken ribs, and blows), 15; occurred in the course of typhoid fever, 5; occurred in the course of acute rheumatism, 5; following phthisis (clinical, not with autopsy records, 14; following a debauch (immediately), 12.

Onset. A chill was noted in almost one-third of the cases. Multiple chills occurred in three cases. Pain was, of course, the predominant symptom, and was present in 433 cases, in three of which it was entirely abdominal, and in eight others it occurred in both chest and abdomen. Cough, also a constant symptom and was mentioned in 369 cases, while actual dyspnœa occurred 272 times. Vomiting was frequent (37) and epistaxis was not rare. In three children the attack began with convulsions. Of the side principally affected there was practically no difference—242 right as to 228 left, and 30 double pleurisies.

Effusions. Three-fifths of the cases were serous effusions and one-fifth were purulent. In the other fifth no effusion occurred. In classifying the amount of effusion, the angle of the scapula was considered as one-third of the chest, the level of the scapular spine as two-thirds; all effusions above the spine were termed massive, while all below the angle were classified as basal. While not anatomically accurate, the classification is simple, and sufficiently correct for general comparison. On the right side there were 92 effusions of less than two-thirds and 105 two-thirds or more. On the left side there were 70 effusions of less than two-thirds and 110 two-thirds or more.

Cardiac Displacement. This sign was by no means as frequently mentioned as others, but notes were made in 216 cases. By far the greater number of cases in which marked displacement occurred were left-sided effusions. One left-sided case with two-thirds effusion had the apex in the normal position. In one massive effusion cardiac pulsation was seen, felt, and heard below and within the angle of the left scapula. One case had the apex beat in the fourth space beyond the right border of the sternum, and one case had the entire heart area to the right of the sternum, refused aspiration, and the heart gradually returned to its normal position in the fifth week.

Temperature. In the vast majority of cases the maximum temperature range was over 100° and less than 104°. As might be expected, the greatest temperature reaction occurred in the most recent cases; 42 of 60 cases exceeding 104°. In 21 cases (only four of which were admitted in the first week) a subnormal temperature existed throughout the disease. The highest temperature observed, 108·8°, occurred shortly before death in a maniacal patient who jumped from a window and was greatly shocked, though escaping without any injury. The lowest temperature observed, 94·6°, occurred in an alcoholic suffering from shock, fractured rib, and submersion, having fallen from a wharf into the river while intoxicated; he recovered. A distinctly hectic temperature was noted in 21 empyema cases, 11 tuberculous cases, and two simple serous effusions (one in a child). A typical crisis was noted in seven cases complicated by croupous pneumonia and in one with no pneumonia. Lysis was observed in five cases complicated by croupous pneumonia. Five cases of chronic empyema were absolutely afebrile. Five cases of long duration with high and irregular temperature on aspiration showed no pus. Two cases, undoubtedly tuberculous, were distinctly not hectic.

Aspiration. The amount aspirated usually was from 1,000 c.c. to 2,000 c.c., and but one aspiration was, as a rule, necessary. In only 20 cases the total amount of serum removed (by one or more aspirations) was over 3,000 c.c.

Complications. One-half of the cases were complicated, probably due partly to the wretched class of patients which this hospital receives. Nephritis heads the list, such a complication occurring 106 times. Only such cases as showed hyalogranular or granular casts are admitted, the presence of minute amounts of albumin, with or without hyaline casts and cylindroids, not necessarily indicating more than renal

irritation. Croupous pneumonia occurred 56 times, either just antecedent to, during or immediately following the pleuritis, and in every case contributed to the gravity of the condition, yet some remarkable results are recorded, not less than three cases having double pneumonia with empyema of one side, making perfect recoveries. One case had cropous pneumonia on one side and a large serous effusion on the other. Bilateral pleuritis occurred thirty times, and, the writer thinks, may justly be considered as a complication, often most serious. Most frequently there was a large or massive effusion on one side, with a dry pleuritis or small effusion at the base of the opposite side, but in some instances there was quite a large effusion upon each side. In one case which came to autopsy an inflammatory effusion occupied one pleural cavity and a simple hydrothorax the other. Phthisis or miliary tuberculosis could only be convincingly proved antemortem in 30 cases, thought naturally suspected in many others. At autopsy it was frequently found, but almost always in those cases in which it had previously been diagnosed, as they were the cases in which the death ratio was greatest. Pericarditis occurred nine times (in two cases of which there was only *right*-sided pleurisy).

Urine. Acute nephritis was found in 77 cases and chronic nephritis in only 29 of the 500. In 16 cases casts were found, but not albumin; generally only hyaline casts. A few contained granular casts, and may be added to the list of chronic nephritis. Bile was found in seven cases, nearly all complicated by cholecystitis; hæmorrhagic nephritis occurred but thrice.

Blood. The blood counts are by no means numerous, and apart from the leucocyte counts show little interest.In the tuberculous cases the leucocyte counts were the lowest, only in two instances (both cases of empyema) exceeding 10,000. In empyema (not tuberculous) the count was generally high, though in one instance it was below 6,000 and in three others below 10,000. In complicated cases the leucocyte counts usually rose considerably above the counts in the simple serous pleurisies, but in only two cases were over 50,000, both of which had croupous pneumonia. Blood cultures were resorted to four times; in one instance a pure culture of pneumooccus was obtained, which was found in all cultures post-mortem. Malarial organisms were found twice in fresh blood preparations.

Sputum. Many examinations of the sputum were made, but the results may be briefly tabulated as follows: Tubercle bacilli were found in three empyemas, and in 11 other cases. Pneumocci were found in six empyemas, and in 18 other cases.

The Effusions. In almost all the serous cases the specific gravity was between 1015 and 1025. The amount of albumin present was more variable, but usually ranged between 15 and 40 grams per litre. In two cases the albumin was extremely high; once 70 and once 80 grams per litre. The bacteriological examination of the exudates was as follows:—

	Tubercle bacillus.	Pneumo-coccus.	Strepto-coccus.	Bac. col. communis.	Sterile.
In the examination of aspirated pus - -	1	24	10	0	11
In the examination of aspirated serum - -	1	13	1	3	59

In one, effusion sugar was found; in one, liver cells and tyrosin bundles; in one, liver cells and hæmatin and bilirubin crystals. In one, empyema cholesterin crystals were found. In two, empyemas following hepatic abscess, examinations were made for amœba with negative results. In the single case of tumour, blood cells and endothelial cells were numerous.

Physical Signs and Symptoms. Bulging of the chest or obliteration of the interspaces is noted as occurring in 15 empyemas and 50 serous effusions. Movable dulness is noted but 40 times. Egophony was noted in five empyemas and 48 serous (usually small) effusions. Pectoriloquy occurred in eight cases, bronchophony in three, amphoric breathing in four, bell tympany in five, metallic tinkling in three, and succussion splash in two cases. Skodaic resonance is mentioned in but four cases, probably because it is so frequently found that it is not considered worthy of record. Distant bronchial breathing over an effusion is almost as frequent as is the absence of breath sounds. A difference in the mensuration of the two sides of the chest is mentioned but 15 times; twice it was said to be the same on both sides. The liver was found displaced appreciably below the costal border 68 times, in all but nine of which effusion was right-sided (five times with a massive left effusion and twice with the left-sided effusion complicated by a cholecystitis). The spleen was found displaced appreciably below the costal border 23 times, in all but two of which effusion was left-sided (malaria, typhoid, etc., omitted). Œdema of the chest occurred eight times. Pulsation of the right side was observed in a left-sided effusion where pericardial adhesions were present. Extreme abdominal distension was noted in one case. Marked tenderness to light pressure or percussion over the affected side was present in nine non-purulent cases. Persistence of friction was noted in one case eleven weeks, in anothr eight weeks, and in another five weeks. Aniscoria was noted in seven cases, in one of which, complicated by locomotor ataxia, the Argyll-Robertson pupil was observed. In the other six the pupil was larger on the affected side five times and smaller once. Subcutaneous emphysema occurred after aspiration in one case, but rapidly disappeared without bad effect. Delirium was noted late in the course of the disease in non-alcoholics four times. In one case of double pleurisy with marked physical signs there were practically no symptoms. Skiagrams in three cases located missing drainage tubes in the pleural cavity, and in one case a grooved director, which was recovered from the chest a week after the original operation. A few anomalies of pulse and respiration are worth recording. In one massive effusion the highest respiration-rate was 24. In another with both friction and effusion it was 20. In one case with a temperature of 105° respirations were 28, and in one case with a subnormal temperature the respirations were 44. In one case with large effusions the highest pulse-rate was 64. In another with respirations 36, the pulse was but 72; and in another with respirations 40, the pulse was 80. In still another case with the respirations 54, the pulse was but 104, and later on in convalescence went as low as 54. In another case with very great cardiac displacement the pulse was

never over 96, and it fell to 48 after aspiration as the heart returned to its normal position.

Treatment. The great majority of dry pleurisies cured in the first two weeks (36 in the first week); and the average duration before cure was fifteen days for the entire series, including complicated cases; 77 per cent. of this series were admitted in the first week of disease. Of the 231 serous effusions the average was twenty-five days, and half the cases were cured in the second and third weeks. The time of admission is very evenly divided between the short, medium and long periods, but is slightly in favour of the medium. Of 320 non-purulent cases all but 13 were cured in less than two months.

With the empyemas we find a very different state of affairs. Almost all the cases were admitted early (generally with pneumonia, developing the empyema in the hospital), or else after the effusion had been established for some weeks, and of these two classes there are almost an equal number, only six of the 50 cases being admitted in the second week. No patient with empyema was cured in less than four weeks, and the average is ninety days, or exactly three months. On the other hand, all but six patients were cured in four months or less, and these were severely complicated.

Tapping vs. Non-tapping in Serous Effusion. In comparing the results achieved in which mechanical interference was employed with those in which no such procedure was attempted, it soon became obvious that only uncomplicated cases could be fairly contrasted. The complications varied so greatly in severity, in some cases lengthening the course of the disease by many weeks, and in others having little or no such influence, that deductions from these cases would be decidedly misleading.

In the accompanying table, which details all the complicated and uncomplicated cases, it will at once be seen how variable are the results in the cases with complications, for in these cases it appears that those not tapped recovered much the sooner. The facts are, that the complications were much severer in those tapped, and possibly for that very reason the aspiration became imperative. Only cases discharged as cured are considered, and slight effusions at the base are not included, as in no cases were such aspirated. Uncomplicated cases of serous effusions aspirated recovered in three weeks, whereas another week was necessary to effect a cure in the non-aspirated. Strangely enough, the contrast is more marked in the small effusions than in those of moderate size. In the massive effusions the contrast is mostly afforded by those patients who refused aspiration, and the encouraging average of 24·7 days in the aspirated as against 55 days in the other group makes further comment unnecessary regarding aspiration in such cases. It is but fair to say, however, that in hospital practice aspiration is performed under the most favourable conditions possible for asepsis, and with the best chances for combating any hitch or emergency that may arise in the proceeding. In private practice, on the other hand, taking all the factors into consideration, in an uncomplicated serous effusion not exceeding what is here termed "one-third" of the chest,

aspiration should at least be delayed until it becomes evident that absorption will not occur naturally in two weeks, as it did quite frequently in the non-aspirated small effusions in this series.

Treatment of Empyema. These statistics emphasise the fact that in resection alone is there safety. Even then in 75 resected cases there were 13 deaths. The mortality is high at all times, 22 per cent. for our entire series, but only 17 per cent. for those resected, as against 40 per cent. for those not resected. In those cases in which simple incision and drainage was performed the mortality was 27 per cent., and in those not drained five out of nine died; of the other four, only one was cured at the time of leaving the hospital, which they did notwithstanding earnest protest.

Mortality and Causes of Death. No uncomplicated case of non-purulent pleurisy died. Three cases of pleurisy without effusion succumbed, but two of them occurred late in the course of typhoid fever, and the third was an alcoholic patient, who developed delirium tremens; death occurred in 16 of the 315 serous effusions (5 per cent.). The mortality for the entire series (40) is exactly 8 per cent., which for hospital cases is not unduly high. A majority of the deaths occurred early (16 in the first week after admission), and consisted mostly of those cases complicated by pneumonia and acute nephritis, and of empyemas moribund from septicæmia.

E. M. Brockbank.

Gorbinier (H. C.) **The Motor Area of the Human Motor Cortex.**
American Journ. of Med. Science, 1907, p. 717.

In this paper, which is a contribution from the clinical side to the determination of the motor area of the human cortex, the author describes three interesting cases:—

In the first case the clinical symptoms began with focal Jacksonian attacks, usually commencing in the left leg, which were not preceded by any sensory aura. Within a few months the left leg became completely paralysed, and the left arm and the lower facial muscles of the same side became very weak, but there was no defect of tactile, temperature, pain or muscular sense, or any disturbance of stereognosis. After death a tumour was found absolutely limited to the upper part of the ascending frontal gyrus, the corresponding part of the paracentral convolution and the bases of the superior and middle frontal gyri.

In the second case the illness began with left-sided unilateral convulsions preceded by clonic movements of the head and eyes towards the left side. There was no numbness or other sensory disturbance associated with these attacks. The left arm and the lower left facial muscles gradually became paralysed, but the strength of the leg was not diminished. No affection of any form of sensation could be detected. Post-mortem examination revealed an abscess just beneath the cortex of the middle third of the ascending frontal gyrus extending into the bases of the second and third frontal convolutions.

The third case was that of a woman who had been infected with

syphilis. Besides the general symptoms of intra-cranial disease she had had for three years recurring attacks of clonic spasm in the facial muscles of the right side without any local sensory symptoms and without any trace of aphasia. She died after a series of general epileptiform convulsions, but the only change that could be found in the brain was a localised area of scar tissue and a broken-down gumma in the lowest part of the left ascending frontal convolution.

The special interest of these cases is in the support they afford to the doctrine of the definite localisation of motor and sensory centres distinct from one another in the cortex, the motor centres being situated in front of, the sensory behind the fissure of Rolando. In each of the author's cases the disease lay entirely in front of Rolando, and in each of the three there were well marked motor symptoms unaccompanied by sensory disturbance.

GORDON HOLMES.

ROLLESTON (J. D.) **The Accidental Rashes in Varicella.** *Brit. Med. Journ.*, May 4th, 1907.

THE varieties of the accidental rashes of varicella are in order of frequency—scarlatiniform, purpuric, morbilliform and mixed. Urticaria, which not unfrequently precedes the characteristic eruption of measles, is rarely met with in varicella. Like the prodromal rashes of measles, the accidental rashes of varicella are usually of short duration, and are not accompanied by any cutaneous irritation nor followed by desquamation. These facts sufficiently explain how it is that the accidental rashes of these two diseases have not received a wide recognition in the profession. From a diagnostic standpoint varicella rashes are of considerable interest. The scarlatiniform variety is most likely to cause difficulty in diagnosis. Since 1899 a total of 94 cases, or an annual average of 15·6 cases, of varicella has been admitted to the Metropolitan Asylums Board hospitals, which had been certified to be suffering from scarlet fever, probably on account of the prodromal scarlatiniform rash. With the important exception that the scarlatiniform rash of varicella is not followed by desquamation there is no definite pathognomonic feature to distinguish it from the eruption of scalet fever. The triad of symptoms supposed to be characteristic of scarlet fever—namely, headache, vomiting, and sore throat—may also occur in varicella. Can varicella exist without a vesicular eruption? In other words, is there a varicella sine varicellis analogous to variola sine variolis and morbilli sine morbillis? French writers have recorded cases where the prodromal rash formed the entire eruption in small-pox.

ROLLESTON (J. D.) **Rhinorrhœa in Faucial Diphtheria.** *Metrop. Asylum Board*, 1906.

A LARGE percentage of all cases of faucial diphtheria admitted to hospital has a history of rhinorrhœa. In a certain number of cases which clinically are purely faucial, rhinorrhœa is an early symptom,

subsequently disappearing without treatment. The frequency of this early and transitory rhinorrhœa bears a direct relation to the mildness and an inverse relation to the severity of the faucial attack, and faucial cases which are also clinically nasal are more severe than those which are clinically faucial only, and as a rule develop the nasal discharge at a later date than those which are clinically faucial only. Early and transitory rhinorrhœa is relatively more common in laryngeal cases than in those that are purely faucial.

E. M. Brockbank.

Oppenheim (Prof. H.). **The First Signs of Neurosis in Childhood.**[1] *Berlin*, 1907. (Address to the Society for the Observation of Children).

This address is devoted to a description and analysis of the symptoms of neurosis in childhood; organic disease of the nervous system and mental affections are not considered; and only the symptoms and indications of neurosis, neurasthenia, hysteria and mixed forms of these affections are described.

In early childhood, as a rule, it is only one symptom of neurasthenia or hysteria or a small group of symptoms which furnishes the first indication of the neuropathic condition.

The following abnormalities of temper and disposition are important early signs of neurosis:—

1. Mental irritability. A slight irritation produces disproportional emotional disturbance.

2. Long duration of emotional reactions. The emotional reaction persists for an abnormally long time after the irritating influence has ceased.

3. Rapid change and great variability of disposition.

4. Perverse, paradoxical emotional reactions. A marked feeling of displeasure is caused by impression (such as smells, tastes, colours), which in normal children either produce a feeling of pleasure, or do not influence the emotions.

5. Other emotional conditions are met with, such as the tendency for laughing and crying to pass into spasmodic attacks (laughing and crying fits); the tendency for fits of passion to pass into attacks of convulsions or temporary madness; the occurrence of fainting through irritation of the special senses or through mental shocks.

Increased reaction to fright (great timidity) is a very common symptom of neurosis in children. In 19 out of 40 of Oppenheim's cases, it was the first symptom noted by the parents or relatives. In many cases almost every new impression, and the sight of new objects (the first sight of a horse, dog or new toy), produced severe and long-

1. Monograph by Prof. H. Oppenheim—"Drei Vorträge," "Nervenkrankheit und Lektüre," "Nervenleiden und Erziehung," "Die ersten Zeichen der Nervosität des Kindesalters," Karger. *Berlin*, 1907.

continued fright. Mental disturbances which not infrequently occur are hallucinatory delirium, mental exhaustion during the first year of school attendance, headache and inability to fix the attention on school work. Sleeplessness, screaming and crying during sleep, and somnambulism are also symptoms which may be due to neurosis in childhood, but they are also often due to other causes. Additional symptoms of neurosis in children are great dread of various animals, insects, etc., great dislike of various kinds of food, the intense fear of being alone in the dark, fear of travelling, terror on seeing pointed objects, fear and dislike of clothing, etc.

Various forms of "habit spasms" or tic are often met with, such as frequent jerking of the head, blinking of the eyes, retraction of the mouth, hawking or clearing the throat, movements of the limbs, etc. Associated with these habit spasms are absent-mindedness and inattention. Other similar symptoms are general motor restlessness and emotional tremor. Paresis is a very rare symptom, but it may occur in infantile hysteria.

Vasomotor disturbances, such as excessive blushing, are common. The skin is often very sensitive to irritation of various kinds, and marked hyperæmia or nettle rash is easily produced. Other neurotic symptoms are nervous palpitation, a tendency to fainting, which occurs on the slightest mental shock, nervous vomiting produced by slight emotional excitement, nervous headache, especially migraine, commencing in early childhood, hyperæsthesia of the sense organs. undue sensitiveness of the skin, nails and hair, great sensitiveness to cold and heat.

As regards the digestive apparatus, neurotic children often present idiosyncrasies with respect to articles of food—intolerance of butter, milk, eggs, etc.

In conclusion, Oppenheim points out that some of the symptoms to which he has drawn attention may be inherited or acquired peculiarities, and are not necessarily indications that a definite nervous ailment is developing. Also certain of these symptoms may be caused by diseases not affecting the nervous system directly. Hence caution is necessary in drawing conclusions, especially when there is only one symptom, and not a group of symptoms.

The signs of neurosis described in this article should be regarded, therefore, by parents and teachers, as warning signals, and not necessarily as indications of the onset of serious disease. Medical advice should, however, be sought as to their importance and meaning.

Though we are not able to change a congenital or hereditary neuropathic constitution, we can check the development of neurosis by the method of education, by treatment, and especially by protection from certain injurious influences. The method of education suitable for such cases has been described by Oppenheim in a previous lecture (see *Med. Chron.*, December, 1903).

R. T. Williamson.

TURCK (F. B.) **Non-operative treatment of Gastric Diseases.** *New York Med. Journ.*, May, 1907.

THE writer is of opinion that the scope of surgery in modern gastro-intestinal therapeutics has narrowed and is ever narrowing as our knowledge broadens. He admits that surgical interference is justified in cases of pathological obstruction and in tumours. Occasionally, too, for purposes of diagnosis, it is to be recommended. In gastric ulcer the only cases in which he thinks it is of value are cases of recurrent hæmorrhage, of perforation and of cicatricial contraction producing obstruction. In gastric motor insufficiency and in gastroptosis surgical interference is contra-indicated, because these conditions are dependent on loss of muscular tone. To effect the restoration of muscular tone the author recommends medical treatment in the form of careful dieting and mechanical treatment consisting of stimulation of the peristaltic movements of the stomach and colon by means of the introduction of compressed air and alternating streams of hot and cold water.

E. N. CUNLIFFE.

EGDAHL (A.) **A Review of one hundred and five reported cases of Acute Pancreatitis, with special reference to etiology; with report of two cases.** *Johns Hopk. Hosp. Bull.*, Apr. 1907.

THE author includes cases of acute hæmorrhagic pancreatitis and of acute suppurative pancreatitis. His investigations were made with special reference to the etiology of the condition. Gall-stones were found in 42 per cent. of the cases, and are probably the most common single cause. They act, presumably, by causing retrojection of bile, infection with bacterium coli communis being a frequent sequela. Gastro-intestinal disorders are the next most common cause. It is suggested that the intestinal disorder may cause an obstruction at the papilla of Vater leading to the retrojection of bile. To this group 30 per cent. of the cases belong. In the remaining 28 per cent. of cases a variety of disorders were found. Mumps, typhoid fever, tuberculosis, trauma, syphilis, emboli, appendicitis, malaria and gastric ulcer have all been found associated with cases of this disease by different observers.

E. N. CUNLIFFE.

STURSBERG (H.) **On a case of extra-medullary Spinal Tumour with painless course, cured by operation.** *Deutsche Zeitschrift für Nervenheilkunde.* Bd. 32, H. 2 and 3, 1907.

THE author records a case of spinal tumour admitted into the clinic of Prof. Schultze (of Bonn). The chief symptoms were those of spastic paraplegia of gradual onset, with impaired sensation. The weakness of the legs increased until the patient was unable to walk. There was no pain during the whole of the course of the illness. An operation was performed by Bier, and a psammoma of the meninges (extra-medullary tumour) removed from the dorsal region. Recovery followed, and, when

the case was recorded, the patient was able to walk without assistance. From the study of the symptoms in this case the author draws the following conclusions:—When there are symptoms which indicate that a lesion of the spinal cord is progressive, but that its upper limit remains stationary, or at least ascends only very little, we are justified in suspecting an extra-medullary tumour, and the case should be treated as such, even though there may have been no irritative symptoms during the whole course of the disease.

R. T. Williamson.

Watabiki (T.) **A study of the Blood in Syphilis.** *American Medicine*, April, 1907.

The condition of the blood in syphilis varies in the three stages; speaking generally, in uncomplicated cases, there is no departure from the normal in the primary stage. The characteristic condition in the secondary stage is one of chlorosis—the so-called "syphilitic chlorosis." The tertiary stage is untreated cases is frequently associated with a pernicious anæmia type of blood, especially in infants. Megaloblasts may even be present. Treatment, in all cases, tends to lessen the impoverishment of the blood. The hæmoglobin percentage is lowered in all stages, being lowest in the secondary. The leucocytosis of syphilis is related to the eruption and to the anæmia. In cases which have not been treated the increase affects chiefly the lymphocytes, the polymorphonuclears being decreased; the administration of mercury reverses this condition. Lymphocytosis is most marked in the secondary stage. Myelocytes have been observed in this stage, and in cases of bad prognosis the polymorphonuclears are increased from the outset of this stage. Gummata are associated with both lymphocytosis and leucocytosis. Occasional myelocytes are not common. In the presence of syphilitic anæmia the blood platelets are increased.

The author of this paper agrees with these results in the main. He finds a slight decrease in the lymphocytes in the primary stage with an increase of the polymorphonuclears with Z-shaped nuclei. In the secondary stage the total count of the white cells is somewhat decreased, the leucocytes showing dense granulation. Leucopenia also obtains in the tertiary stage, there being, however, an increase in the eosinophils. Myelocytes are also slightly increased in the tertiary stage. The hæmoglobin index is always reduced in syphilis.

Donald Core.

Sutherland (G. A.) **Lecture on some types of Vomiting in Children.** *Clin. Journ.*, May 8th, 1907.

The vomiting centre in early life seems to be in a state of great alertness and acts on the slightest provocation, as it is without the controlling influences which are developed later.

Overflow vomiting. This is due to too rapid filling or to overfilling, and is unimportant except that it may lead to dilatation later.

Habit vomiting. Here the vomiting is more a habit, and disappears with age, but it may be met with up to six or eight years of age. It may give rise to malnutrition.

Vomiting from pyloric spasm. This has been described, but it is doubtful whether it occurs as there was no evidence post-mortem in the fatal cases.

Vomiting from pyloric hypertrophy. This form is very important, as it is very commonly overlooked. Too often is the vomiting put down to improper feeding, and the attempts to remedy this by trying other foods are encouraged by the temporary improvement which frequently takes place with each new food. The vomiting is not necessarily severe at first, but it becomes very violent and the other symptoms of pyloric hypertrophy become apparent. Dr. Sutherland classifies the cases into (1) mild which respond to lavage and other forms of medical treatment, and (2) severe, for which only surgical measures are of any avail.

Vomiting from acid intoxication. Acetonæmia is the condition especially referred to; its pathology is obscure, but it occurs in (1) periodic vomiting with no known cause, (2) delayed chloroform poisoning, and (3) salicylic acid poisoning. (1) Periodic, cyclic or recurrent vomiting occurs in infancy and childhood and is characterised by an attack of vomiting which has an abrupt onset and as sudden a termination; there is constipation, the child is often neurotic, and the attacks may occur when the child is being carefully dieted. The attacks may be very severe or even fatal. (2) Vomiting after chloroform has been recently described, the cases showing severe vomiting with acetonæmia. (3) When salicylic acid is given in large doses a condition of acetonæmia is sometimes developed, and of this vomiting is one of the first symptoms. Treatment of acetonæmia consists of sodium bicarb. in large doses, purging and hot baths; prophylactic measures should also be taken to prevent any recurrence of the condition.

Vomiting in Henoch's purpura. In this disease sudden severe abdominal pain occurs accompanied by vomiting and perhaps the eruption of a few purpuric spots. Hæmatemesis, preliminary constipation followed by diarrhœa containing a large amount of blood give an alarming picture, but the absence of physical signs on examination of the abdomen and the eruption should clinch the diagnosis, although laparotomy has been performed. Rest in bed, castor oil, opium and an ice-bag to the abdomen are indicated.

Vomiting of cerebral origin. This is not rare in infancy. It occurs in basilar meningitis, tuberculous meningitis, tumours and syphilitic meningitis.

C. P. Lapage.

Morse (J. L.) **Diseases of the Naso-pharynx in infancy.** *Boston Med. and Surg. Journ.* Vol. clvi., No. 16.

The writer treats of a number of conditions which, though familiar in adults and older children, are insufficiently recognised and inadequately treated as occurring in infancy, in which they are moreover modified by anatomical peculiarities. The nose in infancy is relatively small, and the posterior nares at birth only large enough to admit a medium-sized male catheter. The naso-pharynx is shallow and the soft palate more horizontal than in the adult. Both cavities increase rapidly in height in the first six months, then more slowly. The eustachian tube is absolutely wider at its narrowest point than in the adult. The maxillary antrum is well-developed at birth, but not the frontal sinus. The mastoid antrum is present at birth, but the cells very seldom develop during infancy. The naso-pharynx is extremely vascular and well supplied with lymphatic glands and vessels, and the lymphoid ring is well-developed at birth.

Acute rhinitis is for these reasons a serious and sometimes fatal condition. Nasal respiration is abolished, sleep and suckling are impaired, and loss of weight and strength are rapid. The temperature is always elevated, usually irregular and often high. Local treatment is by nasal drops introduced with the infant on its back—liquid "albolene" alone or with camphor and menthol, or adrenalin (1 in 5,000) in severe cases. A small rubber catheter retained in each nostril is a valuable aid to respiration. General treatment is hygienic and supporting. If unable to suck, the infant should be fed by spoon or dropper or by the stomach-tube. Otitis media is a common complication, but inflammation of the maxillary antrum almost never develops, and the frontal sinuses are undeveloped. He regards acute rhinitis as a contagious disease calling for the same precautions as the eruptive fevers.

Diphtheritic rhinitis is usually very mild, often unsuspected till contact cases of pharyngeal or laryngeal diphtheria appear, and the danger even in severe cases lies rather in nasal obstruction than in toxæmia. Nasal discharge is usually slight, but often characteristic—thin, acrid, irritating. Every nasal discharge in an infant is suspicious, and should be bacteriologically examined. Antitoxin should be freely given. As regards prevention, the writer has found that routine immunisation is the only effectual means of avoiding diphtheria epidemics in infant hospitals; the babies receive 500 units on admission and every three weeks afterwards, a precaution which in his hands has been eminently successful.

Adenoids are very common in infancy; the symptoms, though differing from those in older children, are fairly characteristic, and operative treatment is practically devoid of danger. Nasal obstruction readily occurs and results in interference with sleep and nutrition. Frequent colds and chronic snuffles are the most suggestive symptoms, and adenoids is one of the commonest, if not the commonest of the causes of chronic snuffles in infancy. They are usually overlooked

because the baby does not keep its mouth open, snore at night nor show the typical facies of later childhood. Adenoids may give rise to an irritating cough without physical signs, worse at night, which persists till the cause is recognised. Operation is not always necessary as mild cases often yield to local astringent and stimulating treatment (*e.g.*, iodine gr. ¼ to gr. ½, camphor gr. i., menthol gr. i., benzoinol 1 oz.—5 to 10 drops put into the nose with a dropper every three or four hours). Among the possible sequelæ of adenoids are cervical adenitis, simple or tuberculous, tuberculosis of the middle ear and tuberculous meningitis.

Pharyngitis. The author describes an acute pharyngitis with which he has frequently met. The pharynx and fauces are only moderately reddened, but markedly swollen and œdematous. Abscess never develops. The symptoms are slight nasal irritation and snuffles, troublesome cough, especially during sleep, and paroxysms of dyspnœa. The larynx is never seriously involved, but secondary bronchitis is not uncommon. The temperature is always elevated, the duration is three days to a week, and recovery is the rule, though death may occur from exhaustion. Treatment is unsatisfactory. Glycerine of tannin on a swab seems to do most good along with tube feeding and stimulation.

Retro-pharyngeal adenitis and abscess. The former always precedes the latter, and the symptoms are not characteristic, being those of pharyngitis. Inspection shows nothing definite, but the enlarged nodes are usually easily felt by the finger. Adenitis usually resolves, but may go on to abscess. The abscess is always lateral, but at various levels, the symptoms and signs varying accordingly. The first symptom is usually refusal of food or dysphagia due at first to pain, but later to mechanical obstruction. Modification of the voice and respiratory difficulty next develop. In the acute cases the position of the head is characteristic, the neck being extended and the head turned to one side. The sub-angular glands are enlarged. The temperature is usually high and irregular. The condition may be mistaken for simple pharyngitis, rhinitis or diphtheritic paralysis, or, if low down, for laryngitis or laryngeal diphtheria. Palpation should never be omitted in these cases. A sudden attack of dyspnœa may be the first symptom to call attention to the local condition, whilst in feeble infants a small abscess may develop insidiously without symptoms general or local. Spontaneous evacuation should never be awaited; incision by the mouth should be practised as soon as there is evidence of suppuration, with the infant in the upright position, the opening enlarged with the finger, and drainage encouraged by squeezing the abscess once or twice a day. The mortality in cases thus treated is only about 5 per cent.

Otitis media is also dealt with. The symptoms are often unsuggestive and misleading, pointing perhaps to pneumonia or some cerebral condition. The condition is much more frequent in infants than generally supposed, and no physical examination, in which the findings leave the diagnosis doubt, is complete without an examination of the ears. Earache and mastoid tenderness are of no value; the usual symptoms are sharp cries, restlessness and sleeplessness; reflex nervous

symptoms are common, *e.g.*, rapid respiration, vomiting, tenderness and rigidity of the neck; and convulsions may occur. In other cases, especially in feeble infants, discharge may be the first symptom. The general practitioner should be prepared to do paracentesis, which is not difficult if the membrane can be distinctly seen. A number of interesting cases are detailed illustrating the misleading clinical picture often presented, and the prompt relief afforded by puncture and evacuation of pus.

G. R. Mill.

Weber (F.) **Primary carcinoma of the Appendix.** (*St. Petersburger med. Wochenschr.*, 1907, No. 22, p. 213).

Weber's patient, a clerk of 43, began to suffer from attacks of acute appendicitis in 1901, repeated five or six times a year, and lasting 2—8 days. In May, 1904, he had an unusually severe attack, and came up for operation. A large purulent collection in the right iliac fossa was opened, and much matting together of the intestines was found. The appendix, lost in the adhesions, was not discovered. In three months the patient made a good recovery, and after that complained only of occasional dull aching pains in the region of the cæcum when he was constipated. In February, 1906, he had a dry pleurisy on the right side; no family history of phthisis could be elicited. In April, 1906, the patient came up complaining of a right ventral hernia (? involving the large scar left by the appendicitis operation), and a fist-sized tumour could be felt in the appendix region. Tuberculosis of the appendix was diagnosed; the abdomen was opened a second time, with excision of the scar left by the first operation. Many adhesions were found between abdominal wall, cæcum, ileum, and the omentum; the appendix was hard, irregular, much thickened throughout, 5 inches long, and 2 inches thick at its base; its mesentery was but little altered and contained no lymph glands. The neighbouring cæcal wall was involved, and with a healthy margin 1½ inches wide was removed—this necessitated the taking away of part of Bauhin's valve. The patient made a good recovery and left the hospital in three weeks. Microscopically, a typical adenocarcinoma was found, gelatinous, infiltrating the appendicular mucosa, and invading its muscularis in places; the peritoneal coat was inflamed and thickened, but not attacked by the new growth. Primary cancer of the appendix was first described in 1838 by Merling. Weber gives the literature of the subject, and a brief discussion of it; the condition has only been diagnosed once (Beger, 1882) before operation.

A. J. Jex-Blake.

Kalb (O.) **The so-called "Handgang" after Infantile Spinal Paralysis.** *Münch. med. Woch.*, 1907, No. 23.

The writer describes a case in which bilateral infantile paralysis of the extensors of hip and knee, and also of the adductors, led to an all-fours

type of progression. The child, who came under observation when 4½ years old, developed normally till the age of 18 months, when it was suddenly taken ill with general convulsions followed by paralysis of all (?) the limbs. The arms recovered completely in three weeks, and the paralysis of the lower limbs receded except in the thighs. The child had gradually acquired a peculiar mode of progression by which it was able eventually to achieve a certain rapidity and sureness of movement. No treatment had been attempted. Apart from this the child was normally developed, strong and active, though speech was defective. The cranial nerves, bladder and rectum were unaffected, and the muscles of the upper half of the body were normal. An unusual feature was a limited paresis of the oblique muscles of the left abdomen which offered diminished resistance to palpation and localised bulging or coughing. Both lower limbs were extremely abducted and externally rotated and flexed at hips and knees, with marked atrophy of the buttocks, especially the gluteus maximus, and also of the quadriceps and adductors. There was slight wasting of the peronei. Active extension at the hip was absent except when fully abducted and rotated outwards, *i.e.*, the glutei medius and minimus were only slightly paretic. Adduction was absent. Other hip muscles were active. At the knee extension was absent. Passive movement at hip and knee was correspondingly restricted from contractures. There had thus been bilateral inflammation of the 3—5 lumbar segments and of the left anterior horn of the last 4th dorsal.

Absolute symmetry of the cord lesion is rare and might possibly be ascribed to a primary vulnerability of the particular segment. For the maintenance of the erect posture the action of the gluteal muscles is essential, especially of the G. maximus. The long head of the biceps owing to its unfavourable attachments cannot compensate for loss of the hip extensors, and besides requires an intact antagonist in the quadriceps. The quadriceps itself is less important for the erect attitude, but in the child, who has not completely acquired the power of walking erect, this group cannot be dispensed with on both sides. The writer goes on to describe the mode of progression in his case.

Treatment was directed to overcoming contracture at the hips and knees by repeated application of plaster-of-paris, and succeeded fully in the case of the latter and almost completely in the former. He was able at length to stand erect with only some support to the trunk, and even to walk a couple of steps. It is proposed further to transplant the sartorius and a slip of the biceps into the quadriceps and to employ some sort of supporting apparatus at the hips.

The writer urges, in conclusion, that the gait described in this case is not to be regarded as an isolated curiosity, but as a type of a class of gait resulting from infantile paralysis, and deserving of serious study.

G. R. Mill.

KELEN (S.) **The differential diagnosis of dilatations and deep diverticula of the Oesophagus.** *New York Med. Journ.*, 1907. Feb. 23.

THE following pathological conditions occur in the œsophagus:—(1) Dilatations or symmetrical enlargements due either to an anatomical stenosis, in which case only a small portion of the œsophagus is usually dilated, or to cardio-spasm, in which case a large portion is spindle-shaped; (2) diverticula or irregular bulgings.

The writer describes very briefly—in some cases too briefly for clearness—various methods suggested for the examination of these conditions:—

1. If a tube can be passed for 40 cm., but no further fluid should be drawn off and tested for the presence of the reactions of gastric juice.

2. An œsophageal tube of which the lower end is surrounded by an indiarubber bag, so arranged that it can be inflated through the tube, is passed to the obstruction. The tube is connected to an inverted jar full of water, and, by means of a T-piece, to air-bellows. The glass jar is first shut off by means of a stop-cock and air is blown through the tube to the air-bag. As soon as there is a feeling of distension the stop-cock is turned so that air escapes to the jar where it is measured. By this method the size of the cavity can be judged. If by gentle pressure the tube with the empty bag can then be pushed through to the stomach one can say that the enlargement is due to a dilatation and not to a diverticulum. The possibility of dilating the bag a second time after it has passed through a stricture shows that it has reached the stomach.

3. If food, which comes from a previous and not from the last meal, can be withdrawn from the œsophageal cavity then a diverticulum is present.

4. Various methods have been devised whereby a tube is passed so that the lower end lies in the stomach, while a fenestrated middle part of it is opposite the distended portion of the œsophagus. By this means any fluid lying in a simple dilatation will enter the holes and pass down to the stomach, while any fluid in a diverticulum will not pass down. Coloured fluids are passed into the œsophagus, and the stomach contents are withdrawn later and examined to determine the amount of colouring material present.

5. A diverticulum probe may be of use, for where there is a dilatation the probe enters the stomach in all directions, while it will not do so in the case of a diverticulum.

6. Radiograms taken in an oblique diameter (*a*) after bismuth has been swallowed, (*b*) with a rubber tube loaded with shot or (*c*) with a metal spiral, soft sound in the œsophagus, may aid diagnosis.

7. Examination by means of œsophagoscopy recommended by several authors is not always successful.

E. B. LEECH.

GUISEZ. **Aid afforded by Œsophagoscopy in Cicatricial Stenosis of the Œsophagus.** *Gaz. des Hôpitaux*, June 27, 1907. p. 868.

A CHILD, aged six years, swallowed caustic potash in June, 1906. Gastrostomy was performed some time later and a filiform bougie was passed upwards. The dysphagia diminished and the gastrostomy opening closed. The scar contracted, and a second gastrostomy with dilatation was performed in November, 1906, with the same unsatisfactory result. The structure was then examined with the œsophagoscope, and a thick white scar with an eccentric aperture to the right was seen. Bougies were passed, starting at No. 4 and reaching No. 24, and a few days later this was repeated, again with the help of the œsophagoscope. Lately bougies have been passed weekly without visual aid, the largest size reached being No. 33 (12 mm.). The child, who after the earlier operations had become little more than a skeleton, is now well nourished. It will, of course, be necessary to pass bougies at intervals.

The writer believes that gastrostomy is of little avail in children for death occurs soon in all cases, and thinks that dilatation with the help of the œsophagoscope is the most satisfactory method of dealing with cases of cicatricial stricture. He further discusses the advantage of œsophagotomy by the help of œsophagoscopy; he believes that this will be more successful when the experience of it is greater, but considers that the stricture should not be divided unless a bougie can first be passed and that the œsophagoscope should be used in passing the bougies for the first few times after the œsophagotomy.

E. B. LEECH.

Surgery.

SOME RECENT CONTRIBUTIONS TO THE SURGERY OF THE STOMACH AND DUODENUM.

By P. R. Cooper, M.D., B.Sc. (Lond.), F.R.C.S. (Eng.).

Brewer (G. E.) **A critical review of a recent series of operations upon the Stomach.** *Annals of Surg*, 1907. Vol. xlv., p. 687.

This is a frank record of 17 cases, all operated upon during the last twelve months, presenting symptoms of chronic gastric ulcer or benign stenosis. These cases are divided into two groups—(1) those in which a definite anatomical lesion was demonstrated, (2) those in which no lesion was found.

In *Group 1* there are 12 cases, of which 11 recovered and were immediately relieved of their symptoms, and one died (from pneumonia on the sixth day). Of the 11 recoveries nine remained well, one died six months later, probably from malignant disease, and in one the symptoms recurred.

In *Group 2*, one was immediately relieved of a hysterical pseudo-tetany, one died from persistent vomiting, one continued to suffer from gastric crises (locomotor ataxia), and two could only be classed as "gastric neurosis."

As regards the nature of the operation practised in Group 1: in 11 cases gastro-enterostomy was performed by the posterior no-loop method, in one case Murphy's button being used, in the others ordinary suture. In no instance was there any evidence of functional disturbance due to the side-tracking of the duodenum, and in none of the cases did symptoms of shock or sepsis supervene. In the only fatal case severe hæmatemesis followed the operation, but this ceased, and the patient appeared to be rallying when lobar pneumonia developed. In the remaining cases, *i.e.*, in which no gastro-enterostomy was performed, the pylorus was found angulated and closely adherent to the liver by dense adhesions. When these were divided the stomach dropped into place and the pylorus seemed normal in size.

The cases in Group 2 must be regarded as surgical failures.

The writer concludes that operation is only indicated when the evidence of a definite anatomical lesion is well-nigh conclusive.

Deaver (J. B.) **Report of Operations on the Stomach.** *Annals of Surg.*, 1907. Vol. xlv., p. 435.

These operations were performed at the German Hospital, Philadelphia, during the session 1905–6. They comprise:—

(*a*) Seven cases of *pyloric stenosis*—five benign and two malignant. The *benign* cases were all due to chronic gastric ulcer, and all recovered after posterior gastro-jejunostomy. There were four males, aged 15,

20, 25 and 53, and one female, aged 57. All suffered from chronic dyspepsia. In addition to the thickening, induration and cicatrisation of the pylorus, the stomach was markedly dilated in all these cases. Five years previously the oldest male had undergone a pyloroplasty elsewhere; after a year's relief aggravated symptoms returned. In the female the gastric mucosa was markedly hæmorrhagic, and the second and third parts of the duodenum were congested. It was noted in another patient that solid food was taken two weeks after the operation, and there was a gain of 2 lbs. in weight. The two *malignant* cases, carcinomata, were in males aged 50 and 55. In both the fulminating symptoms of dyspepsia—*e.g.*, six weeks' duration in the elder, with loss of 35 lbs. in weight, and one year in younger, with loss of 30 lbs. in last four months—were in striking contrast to the chronicity of the benign cases. Posterior gastro-jejunostomy relieved the symptoms of the elder patient. In the younger patient there were, in addition to the stenosis, perigastric adhesions, secondary carcinoma of head of pancreas and distended gall-bladder. Pylorectomy, drainage of the gall-bladder and posterior gastro-jejunostomy were performed; the patient died.

(*b*) One case of *cardiac stenosis* was operated upon. A female, aged 43, had suffered for ten months from symptoms due to gradual thickening of the cardia. At operation a large diffuse mass was found involving the cardia and greater curvature and infiltrating the wall to such an extent that gastrostomy was prohibited. Jejunostomy, however, gave relief.

(*c*) One case of *acute gastric ulcer*, in a female aged 37. There had been repeated and severe hæmatemesis which continued in spite of medical treatment. The patient was extremely anæmic, suffered from air-hunger, thirst, and had a rapid pulse. Posterior gastro-enterostomy was performed, but the patient died. The mucosa showed multiple ulcers and a hæmorrhagic or "weeping" state.

GORDON (G. S.) **Hernia of Stomach through the Diaphragm into the Thorax.** *Annals of Surg.*, 1907. Vol. xlv., p. 680.

THE case here recorded was of a man, aged 31, who six years previously had been stabbed in the left flank. For four years he suffered with "knife-like pain over short ribs of left side extending to left shoulder tip and occasionally down left arm;" the pain was easier when lying on left side, but was worse on stooping, and associated with a bulging of the epigastrium. The symptoms improved after vomiting an acrid sour material five minutes to one hour after eating; no hæmatemesis, obstinate constipation; great emaciation; abdomen scaphoid and easily palpated without tenderness; solids on the whole retained better than liquids.

Operation. Laparotomy was performed. The duodenum was identified near middle line, but no stomach was in view. The œsophageal opening in the diaphragm was large enough to admit three fingers, and by introducing these the stomach was brought down from the thorax into the abdomen. The stomach was greatly dilated and of hour-glass form. The proximal part of the hour-glass was attached to

the jejunum by gastro-enterostomy (Mayo). The patient, who had been unable to retain liquid nourishment, sank on the fourth day. Autopsy revealed the stomach in part returned through the diaphragmatic opening into the thorax. The hour-glass constriction had probably corresponded to the junction of the thoracic and abdominal sections of the stomach. It would seem that the diaphragm was so depressed that the stomach was very nearly at its normal level, and plenty of room was left for the expansion of the left lung.

Discussing the surgical treatment of this condition, the writer suggests that, had time permitted, the stomach might have been stitched to the abdominal wall. Possibly jejunostomy alone might have given the patient a better chance, and later, when he had been fed up, other operative measures could have been tried.

McConnell (G.) **Note on Carcinoma of the Cardiac end of the Stomach.** *Annals of Surg.*, 1907. Vol. xlv., p. 682.

This is a report of a case in which a man of 50, who had always been strong and healthy, began to suffer with burning pain after food and hot drinks. He was obliged to live on soft foods. Occasional vomiting followed, and later difficulty of swallowing compelled him to take only liquid food. He lost about 50 lbs. in six months. No tumour could be detected on examination. Gastrostomy was performed, but death occurred about a month later from inability to retain food. At autopsy the stomach was found to be very much shrunken and adherent to the diaphragm, and so far displaced that the pylorus was to the left of the middle line. The gastrostomy opening was not more than one inch from the pylorus. There was a dense mass of tumour growth at the cardiac end of the stomach, and extending about two inches along the œsophagus. Histologically the growth was an adeno-carcinoma. A brief reference to the literature of the subject is appended.

Berg (A. A.) **Duodenal Fistula: Its treatment by gastrojejunostomy and pyloric occlusion.** *Annals of Surg.*, 1907. Vol. lxv., p. 721.

With the view of preventing the rapid deterioration and generally fatal issue in patients afflicted with duodenal fistula the writer proposed (*Central. für Chirurgie*, 1903, p. 556) that a gastro-enterostomy be established and the pylorus occluded. This procedure has since been carried out by the writer in two cases. In the *first case* the duodenal fistula had formed after the operation of cholecystoduodenostomy for the relief of obstructive jaundice (due to pancreatic enlargement, thought to be inflammatory in nature). Murphy's button had been used for the anastomosis, reinforced by a few sero-muscular sutures. Some necrosis of the duodenal wall evidently occurred alongside the button permitting the escape of duodenal contents. The leakage became profuse, and the patient's general condition rapidly deteriorated. An attempt was first made to close the opening in the duodenum by suture after removing the necrotic tissues; the gall-bladder being drained externally by tube. This suture, however, yielded, owing to the infected

state of the parts, and the leakage of duodenal contents again became profuse. Despite the patient's desperate condition it was decided to attempt to side-track the chyme into the jejunum so that the patient's nutrition could proceed. Accordingly an anterior gastro-jejunostomy was rapidly performed with Murphy's button through the incision along the outer border of left rectus muscle, while through the original wound, in which the pyloric end of the stomach was lying exposed, a large silk ligature was passed around the pylorus and drawn sufficiently tight to approximate the mucous walls. The incision at the outer border of the left rectus was closed without drainage, and the primary wound was loosely packed with gauze.

The patient bore the operation well. The discharge from the duodenal fistula ceased and the general condition promptly improved until the tenth day. Death occurred from exhaustion on the seventeenth day. At autopsy the enlargement of the pancreas proved to be cancerous. The pyloric orifice was effectively occluded by the ligature which surrounded it, although there were evidences that the ligature was beginning to tear through. The writer claims that in this case impending death from duodenal leakage was averted by the operation, and that the fatal issue was due to cancerous cachexia.

In the *second case* the duodenal fistula had resulted from the rupture of an ulcer, *i.e.*, seven days after operation for rupture and intra-peritoneal abscess, the primary rupture being closed by three vertical rows of Lembert sutures. Immediately on the discovery of the duodenal fistula a posterior gastro-jejunostomy without a loop was done, but instead of occluding the pylorus the opening in the duodenum was sewn up in the hope that no further leakage would occur now that there was a free way from the stomach to the jejunum. Two days later, however, the suture line in the duodenum again gave way and leakage was renewed. Several further attempts were made to close the duodenal fistula, but all failed; accordingly a broad piece of tape was passed around the pylorus so as to approximate the walls, and this was held in place by a silk ligature, the knot of which rested on the tape and not on the pylorus itself so as to avoid undue pressure. No further leakage occurred, but the patient was so exhausted by the previous discharge that he failed to rally from the last operation and succumbed next day.

The writer considers that the above case clinically demonstrates that a widely patent gastro-jejunal fistula fails to divert the gastric contents when the pylorus is patent, thus confirming Kelling's experiments on dogs. Kelling's method of occluding the pylorus by suture, however, is not applicable when the peritoneal surface is brittle and friable and fixed in inflammatory exudate for the sutures will invariably tear through; hence circular ligature must be resorted to. Here again care must be taken not to constrict the parts or else the ligature will tear through. The writer believes his method of using a piece of broad tape held in position by a silk ligature to be the best. The alternative of jejunostomy is condemned on account of its very high mortality.

MAYO (W. J.) **The contributions of Surgery to a better understanding of Gastric and Duodenal Ulcer.** *Annals of Surg.*, 1907. Vol. xlv., p. 810.

ULCERS of the stomach and duodenum can be divided surgically into two classes—(*a*) the *indurated* or "*callous*" ulcer, which can be seen and felt during operation, on account of the cicatricial tissue which surrounds it; (*b*) the *non-indurated* or "*mucous*" ulcer, which cannot be identified from outside the viscus, and indeed is often difficult to detect if the viscus be opened to operative inspection.

According to the writer, whereas in class (*a*) (which might be called "*surgical*" ulcer) considerable positive advance has been made in surgical knowledge, in class (*b*) (which might be called "medical" ulcer) little if any progress has obtained. The failure of surgery in the latter group is due to (1) the difficulty of locating the ulcer, even its existence being often problematical; (2) the associated symptoms are apt to be confused with pyloric spasm, atonic dilatation, gastroptosis and the gastric neuroses, etc.; (3) the ulcer does not give rise to mechanical interference with the progress of food, which would amount to an operative indication.

(*a*) Dealing first with *indurated ulcer*. Out of 200 cases operated upon 87 involved the stomach, 98 the duodenum, and 15 both. Whereas duodenal ulcers occurs in 77 per cent. males to 23 per cent. females, gastric ulcer occurs in 52 per cent. males to 48 per cent. females. The reason suggested for this preponderance of duodenal ulcer in males is that the curve of the duodenum is usually higher in males, *i.e.*, the first portion is usually ascending, while in females it is often transverse, hence the alkaline secretions of the liver and pancreas can more readily neutralise the acid chyme in the upper duodenum,—96 per cent. of duodenal ulcers being situated within three-fourths of an inch of the pyloric sphincter. Out of 69 operations for cancer of the stomach evidences of pre-existing ulcer were found in 54 per cent. The topography of ulcer and cancer are the same. Cancer of the duodenum is rare; in three cases its origin in ulcer seemed certain in one, possible in the others. In five cases cancer of the stomach was found to have developed upon the margin of a duodenal ulcer which had extended up to and invaded the pylorus, showing the greater susceptibility of the stomach to carcinoma as contrasted with the duodenum. The *symptoms* of chronic indurated ulcer are generally well defined. In the early stages, although there may be no mechanical symptoms, distress is caused by the food and excessively acid gastric secretions passing over the sensitive ulcerated surface; later the development of cicatricial tissue about the base of the ulcer, producing contraction, leads to more or less interference with the progress of food. Evidences of blood are helpful but not essential to diagnosis.

(*b*) *Non-indurated ulcer*. The existence of an *acute* non-indurated ulcer is evidenced by direct surgical inspection, by the operative repair of acute perforations, by operations for acute hæmorrhage, and by post-mortem investigations. The occurrence of a *chronic* non-indurated

ulcer is at present doubtful; the *symptoms* supposed to attend this condition, viz., pain, flatulence, moderate stagnation of food, with pyloric spasm,—are equally characteristic of non-surgical conditions. The demonstration of blood, however, may give support to the diagnosis. [Although it is now recognised that severe and even fatal hæmatemesis may occur without actual ulceration.] In the writer's opinion *pyloric spasm* is a most misleading symptom, not only is it inconstant in "indurated" ulcer, but it is an habitual accompaniment of certain other morbid conditions, *e.g.*, gall-stones, appendicitis, tuberculosis of cæcum, etc., indeed pyloric spasm may be looked upon "as an indication of an irritation in some part of the intestinal canal which causes an irregular attempt to close the pylorus and thus prevent food from entering the disturbed area." Further the association between pyloric spasm, atonic dilatation, prolapse of stomach and gastric neurosis may be due to deficiency of the natural hormones (Starling) of the digestive tract. At the present time, therefore, the writer does not consider that a diagnosis of "mucous" or other undemonstrated ulcer justifies an operation unless complications, *e.g.*, perforation, hæmorrhage or obstruction appear.

Munro (J. C.) **End results in benign lesions of the Stomach surgically treated.** *Annals of Surg.*, 1907. Vol. xiv., p. 818.

This is a record of the results of operation in 150 cases which have been followed in most instances by observation for four years. In 87 cases gross ulcers in the stomach or duodenum or both occurred; in 16 cases, classed as "medical ulcers," no gross palpable lesion was found; in 25 cases well-marked adhesions existed without evidence of active ulceration; the remainder may be classed as neuroses.

Immediate and permanent relief from operation was secured in many cases of (1) congenital pyloric obstruction, and (2) perforated chronic ulcer. *Good results* were also obtained in (3) active ulcers near the pylorus, but not necessarily occluding it; (4) ulcers of the duodenum with occasional exceptions; (5) gross chronic ulcers of the lesser curvature and anterior wall in the pyloric half of the stomach, especially if there were active hæmorrhage; (6) some cases of saddle ulcer; (7) ulcers of the posterior wall near the cardia, that infiltrated towards the upper edge of the stomach; (8) ulcers of the lesser curvature when combined with adhesions that interfered with gastric motility; (9) some ulcers of the posterior wall when the pylorus was not mechanically interfered with; (10) some ulcers at the œsophageal angle of the lesser curvature; (11) ulcers of the greater curvature; (12) hour-glass stomach; (13) stricture of the pylorus; (14) thickening of the pyloric ring without evidence of active ulcer; (15) dilated, sagging stomachs secondary to some recent or early process in or near the pylorus, which mechanically interfered with the evacuation of the gastric contents.

Definite *failures* occurred in two duodenal ulcers and one saddle ulcer, and in two cases (one fatal) sudden bleeding occurred after a year's relief following gastro-enterostomy for duodenal ulcer, and in one case late, fatal hæmorrhage followed an extensive gastric ulceration.

Amongst the 87 cases of *gross ulcer* four deaths were directly attributable to the operation. Other deaths were consecutive to the operation, *i.e.*, the patient being too weak, exhausted, or poisoned to rally. Relapses occurred in three cases.

In the 16 cases of "*medical*" *ulcer*, as a rule, blood was found oozing from the entire mucous membrane or from localised areas, but without visible lesion. An open, soft pylorus was felt in every instance. In two cases calcareous mesenteric glands were met with. In two alcoholics with severe hæmatemesis death promptly followed operation from persistent vomiting. In cases where ptosis or other evidence of inefficient drainage indicated operation the relief was never more than incomplete.

In the 25 cases of *adhesions* excellent results were obtained in all but six, and of these two only complain of eructation. Two cases with persistent vomiting continued to vomit until death 2½ and 4 weeks later. The adhesions met with were, for the most part, firm bands or masses extending from the pylorus or duodenum to the gall-bladder region. In many the pylorus was open, but the functions of the stomach were evidently greatly interfered with. In some the stomach was dragged down by omental adhesions. Intercurrent gall-stones or other surgical lesions were dealt with at the same operation.

The *neurotic* cases were in most cases made worse by operation. In three cases only did some benefit result,—one had a dilated and prolapsed stomach, another had a dilated stomach and duodenum, the third had a typical cardiospasm secondary to irritable pylorus, which was relieved by pyloroplasty (Finney). Many of the other patients had stomachs that were moderately dilated or prolapsed. Some had severe hæmorrhages coming on periodically both before and after operation when the neurotic storm was at its height. In one case after both gastro-enterostomy and entero-anastomosis had been tried in vain, the gastric apparatus was restored to its original anatomical arrangement, with instant relief. On the whole the writer prefers to leave these neurotic cases severely alone.

Referring to the technique of the operation the writer now prefers Mayo's "no loop" method for gastro-enterostomy, using clamps and suture,—linen thread for the serous layer, and fine chromic gut for the musculo-mucous layer. He adopts Finney's method of pyloroplasty in preference to Kocher's gastro-duodenostomy as being simpler and more rational.

Excision of the ulcer-bearing area, which is likewise the cancer area to a great extent, would be the ideal process in all suspicious cases beyond middle life, but unfortunately many patients come late, with little power of resistance owing to prolonged starvation, anæmia, etc., and we cannot yet feel that our technique is sufficeintly established to recommend operation in all cases. In some, however, it will be worth while to run some additional risk in performing a partial gastrectomy if we can fend off a probable malignant degeneration or prevent a perforation or a late hæmorrhage from an ulcer that is incapable of healing.

Frazier (C. H.) **Partial Gastrectomy.** *Annals of Surg.*, 1907. Vol. xlv., p. 950.

This is a report of two cases—one of chronic gastric ulcer and one of gastric carcinoma—in which the whole of the diseased area of the stomach was removed.

Case i., male, æt. 54, had been very healthy up to two years before admission, when his appetite failed, he began to lose weight, complained of pain after food, and later began to vomit. The symptoms grew worse, pain constant, vomiting after every meal; the weight fell from 150 to 98 lbs. Analysis of stomach contents showed absence of HCl and presence of Oppler Boas bacillus. The stomach was somewhat dilated, but no palpable mass was felt. The diagnosis was thought to be pyloric cancer.

Operation. Under morphine-ether anæsthesia, with the patient in the reverse Trendelenburg position, laparotomy was performed a little to the left of the middle line and the stomach exposed. An extensive area of induration was found in the pyloric region, also two palpable lymph nodes in the greater and three in the lesser curvature. There were, however, no adhesions to surrounding structures. The case, which was still thought to be carcinoma, was considered suitable for excision by partial gastrectomy. The four vessels, two in the lesser and two in the greater curvature, were ligatured, enough of the gastro-colic and gastro-hepatic omentum was tied off to include the enlarged lymph nodes from the pylorus to the Mikulicz-Hartmann line. Clamps were applied to the duodenum and stomach, the intervening tissue divided with a cautery knife, the respective ends of duodenum and stomach closed with two layers of sutures, and a no-loop gastro-jejunostomy established with a Murphy's button. Convalescence was short and complete. Three months later the patient had gained 34 lbs. Histological examination showed the mass to be inflammatory, *i.e.*, chronic indurated ulcer.

Case ii., female, aged 50, began, seven months previously, to suffer with epigastric pain, followed soon by vomiting one or two hours after meals. An easily palpable tumour was detected in the pyloric region. Gastric analysis favoured carcinoma. As the tumour was freely moveable and the patient's general condition was good, it was thought suitable for radical operation.

Operation. The stomach was exposed, and the growth was found not to have spread beyond the pyloric portion of the stomach wall and to have invaded but few lymph nodes. Partial gastrectomy was performed, the tissue removed including one inch of duodenum, all that portion of the stomach up to the Mikulicz-Hartmann line, and the palpable lymph nodes. As in Case i., a gastro-jejunostomy was effected with a Murphy's button. The immediate recovery was satisfactory. At the end of a week the patient was sitting up in bed, and relishing the food on her dietary; she had not vomited since the operation. Two days later vomiting and gastric distress returned, there was slight abdominal distension, but no rigidity or tenderness. The temperature was normal. Diarrhœa occurred. Twelve days after operation she

began to fail rapidly, and on the fourteenth day she died. At autopsy the line of union of stomach and duodenum was found completely separated. The writer states that this is his first unfortunate experience with Murphy's button and suggests that it may have been due to imperfect blood supply of the part of the stomach at which the button was introduced.

In conclusion, the mortality of Mayo's cases of partial gastrectomy for pyloric cancer is quoted—viz., 10 per cent., with 25 per cent. alive over three years, the writer considering that the future of this operation is a bright one. On the whole, he regards cancer of the stomach as more favourable for radical operation than either cancer of the breast or of the uterus.

Davis (B. B.) **The surgical treatment of Splanchnoptosis.** *Annals of Surg.*, 1907. Vol. xlv., p. 733.

Whatever be the remote cause of the condition a fully-developed visceral prolapse presents two chief anatomical changes—(1) the weakened muscular walls of the abdomen, and (2) the stretched and attenuated ligaments. The symptoms usually associated with the condition are: (1) impaired digestion, due partly to slow and imperfect stomach drainage, flatulence, gastric and intestinal distension, constipation; (2) more or less auto-toxæmia; (3) many nervous manifestations; (4) abdominal tenderness, etc. These symptoms are in part due to interference with blood and nerve supply, and in part to mechanical interference with physiological functions. No treatment—medical, mechanical or surgical,—will be successful that does not recognise all the disturbing factors. The writer does not resort to surgical methods until all known medical and mechanical means have failed to relieve the more serious symptoms which practically make life unbearable. Of the various operative measures which have been tried two chief classes may be distinguished—(1) the prolapsed viscera are in some way sutured or suspended in as nearly as possible the normal position; (2) the abdominal capacity is reduced by narrowing the abdominal wall by plastic methods. In correcting the gastroptosis four different procedures have been advocated—(1) direct suture of the stomach wall to the abdominal wall (Duret, 1894)—gastropexy; (2) suture of the gastro-hepatic and gastro-phrenic ligaments to the abdominal wall (Davis, 1897)—gastro-suspension; (3) shortening of the gastro-hepatic and gastro-phrenic ligaments (Beryea, 1899); (4) suspending the stomach in a hammock made by suturing the omentum to the abdominal wall (Coffey, 1902). In addition to the above, gastro-plication has been done for dilatation and gastro-enterostomy for drainage.

The writer prefers his method of gastro-suspension to gastropexy, as the adhesion of the stomach to the abdominal wall involved in that method is likely to give rise to unpleasant symptoms. He has not used Coffey's method, but thinks it especially applicable to certain cases. Beyea's method gives, he considers, as good but not better results than his own. Gastro-plication and gastro-enterostomy are, he believes, not

necessary if the stomach be restored to its proper position by suspension. Plastic operations on the abdominal wall are not favoured.

The after-treatment is of great importance. Several weeks in bed with vigorous massage of the abdominal wall and forced feeding after the operation give the best results. Where the liver, colon and kidneys are also prolapsed these organs must be similarly restored and suspended. Notes of nine cases are appended, all of which have been benefited by operation.

MARTIN (W.) **The lesions associated with Gunshot Wounds of the Stomach.** *Annals of Surg.*, 1907. Vol., xlv., p. 699.

THE mortality of gunshot injuries of the stomach varies, with two chief factors—(1) the time of efficient surgical intervention, *i.e.*, by suture, etc.; (2) presence and gravity of co-existing injuries. Uncomplicated wounds, which, however, in gunshot injuries are extremely rare, and unless the patient quickly succumbs to hæmorrhage or shock, should, if sutured within the first few hours, usually end in recovery. It is often a very difficult matter to discover the wound of exit, and in order to avoid the risk of overlooking it the writer suggests introducing a rubber tube through the wound of entry, surrounding it with a purse-string suture, and injecting fluid into the stomach, and observing its escape. If no fluid escapes it may be inferred that the opening is too small to cause dangerous leakage. A rare result of gunshot injury of the stomach is a hæmorrhagic condition of the mucosa caused by a spent bullet, *i.e.*, practically a gastric ulcer, which may later be followed by perforation.

Of the lesions associated with gunshot wounds of the stomach the most frequent are wounds of the thoracic wall and *diaphragm* on the left side, with, in many cases, involvement of *left pleura* and *lung*. Such wounds are usually treated by carefully cleansing the surrounding skin, applying an occlusive dressing and securing complete rest. The resulting hæmothorax is treated by aspiration, as soon as signs of dangerous compression appear. The introduction of infectious matter into the pleura is almost certain to be followed by empyema, so, if there is evidence of such, *e.g.*, the escape of stomach contents into the thorax, drainage of the chest is advisable. Wounds of the diaphragm usually heal, and diaphragmatic hernia is uncommon; nevertheless, the writer believes that if the diaphragmatic wound be accessible, it should be sutured. Injury to the *liver* is the most frequent abdominal complication, and the wound is usually of the left lobe; the hæmorrhage has not as a rule been profuse. The wound of the liver may be closed by suture, and hæmorrhage checked by packing. The gall-bladder, if injured, may be excised. The *spleen* has been injured many times. If much damaged it is best excised, owing to the difficulty of suturing the organ; in one case the patient recovered after packing the splenic wound. The *pancreas* is not infrequently wounded, and the injury is very fatal. Suture of the pancreatic wound and drainage is the treatment recommended, and in a recent series of cases there were more than 50 per cent. of recoveries. The *kidney* may be wounded at its

upper pole, and a large retro-peritoneal hæmorrhage may result. These lesions may not be detected during life, or may be inferred from occurrence of hæmaturia, etc. In two cases where the kidney was removed death followed; in one case where the 12th rib was resected and the kidney wound was packed the patient recovered. The *transverse colon* and *small intestine* may be simultaneously perforated, often in many places, and the danger of overlooking one or more small perforations is readily understood.

The writer concludes that the complicating lesions are in most instances of graver significance than the gastric injury. The apparently high mortality of gunshot wounds of the stomach is due to the frequency of these graver associated lesions. Immediate laparotomy is the only treatment to be considered, at least in civil practice, at the present time and within reach of modern appliances. One should not wait for hæmatemesis, rigidity, etc., even a small perforating wound over the area of "gastric vulnerability" (*i.e.*, from level of 5th rib in left mammary line to level of extremities of 10th rib anteriorly; and from 8th rib in scapular line to level of spinous process of 2nd lumbar vertebra posteriorly), should be sufficient justification for exploratory operation.

The writer has tabulated 25 cases submitted to operation within the first few hours, showing recoveries in over 75 per cent. The cases are not selected, but probably fairly represent the present state of the surgery of these injuries. When it is remembered that in two of these cases splenectomy was performed, in two thoracotomy as well as laparotomy, in five suture of the diaphragm, in one resection of rib and packing kidney, and in one excision of the gall-bladder, the results are distinctly encouraging.

Dambrin (C.) **The Luxations of the Semi-lunar Cartilages of the Knee.** *Revue de Chirurgie*, March and April, 1907.

In his lengthy and detailed paper the author has studied this subject from the point of view of experimental and operative work. He notes the frequency with which the internal cartilage is detached, and believes that this frequency is accounted for by the fact that the internal semi-lunar is not only thinner and less resistant than the external, but is also less securely fixed to the head of the tibia. This is especially marked at the anterior extremity of the cartilage. The various types of luxation are classified and described in detail. The simple relaxation of the cartilage is not of common occurrence—it is much more usual to find that some amount of tearing has taken place. This tearing may affect the attachment of the cartilage or may split or actually rupture the semi-lunar itself. Such ruptures are usually longitudinal in direction and partial in extent, but cases of complete longitudinal or transverse division of the cartilage are occasionally seen. The diagnosis of a recent case affords but little difficulty as the only condition which may cause trouble in diagnosis is a ruptured lateral ligament of the knee. In the old recurring cases the diagnosis is not so easy, and

chief stress is to be laid upon the history of injury and the fixed locality of any pain or swelling. In the treatment of recent cases fixation for two weeks is essential, and afterwards, often for some months, it is advisable to recommend the use of some appliance which will limit flexion of the joint and altogether prevent lateral movements. In the recurring cases operative treatment is indicated. Appliances are cumbrous and inefficient. The extirpation of the cartilage is recommended as having given better results than those which have followed attempts to fix the cartilage by suture.

E. D. Telford.

Schwartz (A.) and Dreyfus (P.) **Rupture of the Lung without fracture of the ribs.** *Revue de Chirurgie*, May, 1907.

In the author's case a severe contusion of the upper part of the thorax by the wheel of a heavily-laden cart led to a rapid emphysema with the physical signs of a left-sided hæmo-pneumothorax. Death ensued, and a post-mortem examination disclosed the fact that the parietal pleura was intact and that the thoracic wall was uninjured save for a detachment of the first and second left costal cartilages at their sternal insertion. The lung showed several small scattered tears in its upper position, these tears involving the visceral pleura leading to a small amount of fluid blood in the pleural cavity. The air which caused the emphysema had tracked along the peri-bronchial cellular tissue and had reached the posterior mediastinum, escaping from there into the neck. The cause of death was pneumonia.

Cases of this kind, though rare, are well recognised, and several explanations have been advanced to account for their occurrence. They may be regarded as due to severe and sudden compression of the lung in association with closure of the glottis. The proof of closure of the glottis at the time presents difficulties and on another view these ruptures are regarded as due to the intimate adherence of the pulmonary to the parietal pleura which prevents any gliding movement of the lung in cases of sudden compression and by fixing the lung leads directly to some tearing of its substance. It is further reasonable to suppose that the air passages of a normal lung are insufficient to relieve the momentary extreme pressure induced by a sudden severe compression, and in this way the lung may be ruptured. The ruptures are usually small, but very numerous. The patients exhibit much shock with grave dyspnœa; hæmoptysis is very variable; hæmo-pneumothorax is common, and surgical emphysema is a very constant and serious feature of the cases. This emphysema appears usually at the root of the neck and spreads with great rapidity over the whole body. The prognosis of the injury is very grave; five of the seven cases collected by the authors proved fatal. If death does not ensue rapidly from shock or asphyxia it is likely to follow from a secondary pneumonia.

E. D. Telford.

Delore (X.) and Chalier (K.) **Perineal Extirpation in Cancer of the anus and rectum.** *Revue de Chirurgie*, May, 1907.

In the vast majority of cases a method of perineal excision of the rectum with ablation of the coccyx is sufficient for the removal of malignant neoplasms in this region. The authors have practised this method, and believe it from every point of view superior to the more formidable procedures of Kraske and the abdomino-perineal route. The detailed description of the operation which they give differs in a few interesting points from that usually given. The preliminary colostomy is not advised. It is usually advisable or even essential to remove the sphincter muscles. The rectum is at first freed from its lateral attachments to the levatores ani, and is then freely stripped up behind as far as the sacral promontory. This procedure has the advantage of affording an exact notion of the extent of the malignant disease at an early stage of the operation. The peritoneum is opened in front and packed off temporarily until the gut is sufficiently freed. The packing is then removed and the peritoneal opening closed by suture. The stump left after removal is fixed in the position of the normal anus. Careful drainage of the peri-rectal tissue is essential, and the authors maintain throughout the operation a very high ideal of antiseptic technique. The operation has been done in 19 cases, and has been attended by only two deaths. This mortality compares very favourably indeed with that of other radical operations. From a survey of the cases appended to the paper it would appear also that the late results have been of a most encouraging order.

E. D. Telford.

Rigby and Howard. **Torsion of the Testis.** *Lancet*, May 25th, 1907.

The authors base the paper on nine cases coming under their notice at the London Hospital. The condition is more common in subjects under 20 years of age; it more frequently affects the imperfectly descended testis in the inguinal canal than the fully descended one. The exciting cause is unknown; in some cases trauma has been ascribed; the predisposing cause is, the authors believe, a congenital abnormality whether the testis is or is not fully descended; this abnormality consists of (1) an attachment of the mesentery of the testis to the lower pole of the testis and globus minor only, so that except for this stalk-like attachment to its lower end the testis lies free, instead of the normal anchorage effected by the attachment of the mesentery along nearly the whole length of the epidiymis and body of testis posteriorly; (2) a voluminous condition of the tunica vaginalis. In the production of torsion inversion of the testis, *i.e.*, globus minor uppermost, but the epididymis occupying its normal posterior position—is believed to be the first movement, torsion of the cord following this; if the latter is a half twist only then the epididymis will occupy an anterior position to the body of the testis—retroversion. The symptoms are sudden in onset—severe pain in the affected testis with some vomiting, the distinction between body and epididymis being soon lost; the frequent occurrence of a blood-stained hydrocele also serves to obliterate this.

Vomiting is common, but is rarely troublesome; the temperature is raised a degree or so; the bowels are not interfered with. These symptoms usually subside within a week, but the painful swelling of the testis may remain some time afterwards. As a result the testis usually undergoes atrophy more or less complete; gangrene is a rare occurrence. The condition must be differentiated from acute epididymo-orchitis, and if the testis is in the canal from strangulated hernia. Occasionally torsion recurs, the symptoms being then less severe and rarely lasting more than 24 hours.

Treatment. Torsion of the inguinal testis should be treated by early removal of the organ with its tunica vaginalis, and at the same time dealing with a hernia if present. In the case of a fully descended testis if seen early it may be possible to untwist the cord, but usually these cases come under observation too late for such treatment to be feasible, even should the testis be exposed by operation. The authors then recommend the adoption of palliative measures—rest in bed, elevation of scrotum with the application of evaporating lead lotion and tapping any concomitant hydrocele if necessary; the atrophied testis resulting from this is a more desirable condition than complete loss of the organ. Suppuration or gangrene will necessarily call for removal of the testis.

H. H. Rayner.

Holt. **Transperitoneal Ligature of the Renal Vessels for persistent Renal Fistula.** *Lancet*, June 8th, 1907.

A young man sustained a rupture of the left kidney from a football accident, extensive abscesses formed around the injured viscus, and eventually there remained a persistent lumbar sinus from which there was a copious discharge of pus and urine; almost the entire secretion of the kidney was voided through the sinus. Four separate attempts were made to perform nephrectomy, but on each occasion the operation was abandoned owing to severe hæmorrhage and the difficulty encountered in defining the kidney amongst the surrounding cicatricial tissue; at the last operation the hæmorrhage was so severe as to endanger the patient's life. After careful consideration—there being no precedent for the operation—the author decided to ligature the renal vessels, and this he successfully carried out some three years after the injury. Lennander's abdominal incision was employed, the posterior peritoneum being opened to the inner side of the descending colon, the renal vein being first secured and then the renal artery; within two months of the operation the sinus healed completely and has remained so up to date, nearly two years in all. The author points out the advantages of such a procedure as contrasted with piecemeal nephrectomy, the usual alternative in these cases, especially the absence of hæmorrhage and shock, and the fact that it is an aseptic operation provided care to be taken to secure the vessels well away from the kidney; he suggests in the case of the right kidney securing the artery to the left of the vena cava, pushing the latter vessel a little aside. He is of opinion that ligature of the artery alone would suffice to induce complete atrophy of the kidney.

H. H. Rayner.

Pathology.

PIERCE CLARK (L.) **The Pathology of Refrigeration Facial Palsy.** *American Journ. of Med. Science,* 1907. p. 730.

AFTER pointing out that there is as yet no reliable information on the pathology of the simple and most common form of Bell's palsy, the author describes the examination of portions removed from the trunks of two facial nerves during operations for facio-hypoglossal anastomosis. In the one case in which the nerve had been paralysed for four months only evidence of simple degeneration was found; in the second, in which the palsy had existed for twelve years, the nerve was converted into a fibrous strand.

It is extremely probable that the disease lies higher in the nerve than in the extra-cranial portion of its trunk; it may with considerable probability be assumed that the primary lesion is a neuritis in the Fallopian canal and that the nerve becoming severely compressed by the inflammatory swelling in this rigid canal undergoes secondary degeneration.

GORDON HOLMES.

GORDON (A.) **The Pathogenesis of Reflexes apropos of a case of Tuberculoma of the Spinal Meninges.** *American Journ. of Med. Science,* 1907. p. 747.

A GIRL, aged 18 years, was admitted to hospital with the history that six months previously she noticed her right arm become weak and painful. Two weeks later the same condition developed in the left arm and shoulder. A month later weakness without pain appeared in the lower extremities, which gradually increased so that within a month there was complete paralysis of the right arm and of the legs, and at the same time loss of control of the bladder and rectum. On examination there was found some power of movement in the left arm, but the other three extremities were completely paralysed. The entire musculature of the body was considerably wasted and the paralysis was flaccid. The knee-jerks, the Achilles-jerks and the plantar reflexes were absent. The patient died two days later.

The autopsy revealed tuberculosis of the vertebræ, tuberculous pachymeningitis and extension of the tuberculous process through the dura mater to the pia-arachnoid and from the latter into the spinal cord. The disease was limited to the lower cervical and the upper dorsal segments of the cord.

The chief point of interest in the case is that the paralysis of the lower limbs was flaccid and their deep reflexes were absent, although no disease was found in the lumbar segments of the cord or in the spinal roots belonging to them. The author assumes that the absence of the reflexes must be attributed to the destruction of the cervical segments and that the lumbar cord does not possess an autonomous centre capable of maintaining reflex action independently of the cerebral centres; in other words, he adopts Bastian's theory.

GORDON HOLMES.

NEPPER. **On the pathogenesis of Mucomembranous Entero-colitis.** *Gaz. des Hôpitaux*, 1907. No. 70.

M. NEPPER enunciates the proposition that muco-membranous colitis is due to deficient biliary secretion. The characteristic content of the stools in this condition is coagulated mucus, the secretion of the mucus and its coagulation being two distinct phenomena. Normally the gastro-intestinal mucus is re-absorbed in the large intestine excepting a trace which is found mixed with the fæces. Pathologically its appearance in the stools, *e.g.*, in dysentery, is explained by increased rapidity of intestinal movement. In membranous colitis, however, this does not hold, since the reverse is the case. It seemed probable indeed that in prolonged stasis of the bowel contents even a hyper-secretion of mucus would be completely re-absorbed. To decide this point he had recourse to experiment on the dog.

The intestinal motility was first tested with carmine or charcoal to assure this being normal. An intestinal fistula is then established in the ileum close to the cæcum, and after a suitable interval the motility test repeated. A solution of silver nitrate introduced with the stomach-tube results in an abundant secretion of mucus, the silver salt being neutralised after about ten minutes with solution of common salt by the mouth. The effect is watched by periodic withdrawal of a portion of the contents by the fistula. It is then found that, provided no diarrhœa has been set up by the silver salt, examination of the fæces shows no more mucus than normally. Mere hyper-secretion is therefore insufficient. The mucus must undergo a physical change, which has been shown by Roger and Trémolières to be due to the coagulating property of an intestinal extract, which they call mucinase. The writer found this property in the fæces of proved cases of muco-membranous colitis and in these alone.

Roger also found that the bile contained substances opposing this coagulative action; these substances are soluble in alcohol, and their action is not destroyed by boiling nor by heating in the autoclave. The writer was able to confirm these results. He recalls the intimate relation of the liver to gastro-intestinal function both in health and in disease, and quotes several authorities in support of a relation between colitis and the hepatic function. He suggests, in conclusion, that the various etiological factors operate in the first instance in diminishing the biliary secretion, and that this in turn determines the constipation and the unopposed action of the mucinase, thus establishing the characteristic syndrome.

C. R. MILL.

SPITTA (H. R. D.) **An account of some experiments in connection with Dr. Marmorek's method for the early diagnosis of Tuberculosis.** *Journ. of Path. and Bact.*, Jan. 1907.

CASES of early tuberculosis—especially the meningeal forms in young children—are occasionally met wth in which the clinical symptoms are so veiled and obscure that it is often a matter of great difficulty to give

a definite diagnosis of the condition without having recourse to a preliminary period of observation. Neglecting for the moment the use of Koch's original tuberculin as a diagnostic agent of undoubted service in selected cases, no rapid and at the same time reliable method—universal in its application—has been brought forward to assist the physician in this direction; hence delay in adopting a definite line of treatment is almost inevitable. Inoculation experiments, though very reliable, are of little service, for the period of time necessary before their results are available is so long that it disposes to a great extent of their practical utility. Recognising these difficulties, and with the primary object of eliminating them, Dr. Marmorek has suggested a principle, based on experimental observations, whereby diagnoses may be carried out in the course of a few hours, thus materially aiding the physician, and directing his line of treatment at an earlier period than has hitherto been possible. This short communication was written at Dr. Marmorek's request, and the conclusions arrived at as to the practical value of the method are reported by the writer as follows:—The subcutaneous inoculation of tuberculous material, followed by an intra-cerebral injection of diluted tuberculin, causes within a period of six hours a rise in the body temperature in certain selected animals, which is not, of necessity, influenced by or dependent on the nature, number or virulence of the tubercle bacilli, and which varies within comparatively wide limits, is not constant, and not of sufficient uniformity to serve as a basis for diagnosis. A definite though variable rise of temperature follows the intra-cerebral injection of diluted solutions of tuberculin within a period of six hours in healthy, tubercle-free animals, and this in some cases is equal to the rise of temperature which follows the injection of tuberculous matter and tuberculin, but in the majority of instances is several tenths of a degree C. less. The operation of trephining has no influence on the causation of this rise of temperature. The normal temperature of a guinea-pig in health may vary as much as 1°C., and often 0·5°C., within a few consecutive hours, and Dr. Marmorek's contention that a rise in the body heat of 2°C. or more follows the inoculation of tubercle bacilli and tuberculin within a period of six hours is by no means always observed, even when virulent tubercle bacilli are present in large numbers. In its present state of development the method suggested by Dr. Marmorek is unsuitable for routine diagnosis for early tuberculosis.

E. M. Brockbank.

Wilson (W. J.) **Pleomorphism as exhibited by bacteria grown on media containing urea.** *Journ of Path. and Bact.*, Jan. 1907.

The presence of urea in media has great influence on the morphology of bacteria grown thereon. The effect of urea on the bacillus coli communis was especially studied. On Conradi-Drigalski medium containing 1, 2 and 3 per cent. of urea, the growth of the B. coli was as active as on the medium containing no urea; plates containing 4 and 5 per cent. of urea showed a fair amount of growth; with 7 per cent.

very little growth occurred, with 8 per cent. practically none. The organism on these media grows out into long filaments. These at first stain evenly, but later on become segmented up into deeply-staining and non-staining portions. The filaments have an average length of 120 μ whilst the average breadth is 0·5 μ. On the course of many of the filaments oval swellings occur; these average 6·6 μ by 3·3 μ. It appeared that the oval swellings occurred most readily on filaments derived from bacilli whose vitality was impaired. The swellings are probably homologous with the clubs observed on the filaments of streptothrices or at any rate with the beading of the branching filaments of the tubercle bacillus. Most of the filaments are unbranched, others show distinct true dichotomous branching, or more frequently short side branches. Branching is not so frequent as a first glance at a film might lead one to think, since filaments of various lengths overlapping each other give the appearance of branching. These filamentous forms persisted whilst the organism was grown on media containing urea, but the short bacillary form was at once assumed when transplantation was made on to ordinary media.

Somewhat similar change of form was observed in the case of the B. typhosus, B. enteritidis of Gaertner, B. pyocyaneus and B. pneumoniæ of Friedländer—that is to say, that on media containing certain percentages of urea these organisms grew out into long filaments, some of them also exhibiting oval swellings and branching. But in the case of B. pestis there was no tendency to assume a filamentous form, but rather a coccus-like appearance. The presence of urea had no influence on the form of staphylococcus pyogenes aureus and albus, sarcina lutea and micrococcus prodigiosus. The writer is not disposed to regard the filamentous forms assumed by bacteria on media containing urea, as indicative either of morbidity or involution due to the antiseptic action of the urea, and advances the following reasons: (1) filamentous forms often occur on ordinary media; (2) on Conradi-Drigalski medium containing 3 per cent. urea, growth is quite as marked as on the Conradi medium alone; the antiseptic action of urea only becomes evident when present in greater amount than 4 per cent; (3) urea is capable of supplying bacteria with their nitrogen, *e.g.*, intestinal organisms grow well on urine agar. The only objection to such a medium as nutrient agar containing 3 per cent. urea is that it may contain excess of nitrogenous food-stuff. Perhaps for organisms to reach their full development their nitrogen should be supplied partly in a proteid and partly in an amide form; and the proportion of these necessarily varies in the case of different micro-organisms. It has become customary owing to the existence of branching filamentous forms, to separate the B. diphtheriæ, B. mallei and the tubercle bacillus from the other schizomycetes and to put them in the same class as actinomyces. These observations would seem to indicate that the B. coli, etc., have the same right to enter that class. The general course of development of the B. coli on media containing urea corresponds very closely to that of a streptothrix on ordinary media.

AUTHOR'S ABSTRACT.

Therapeutics.

TRULLETT. **On the cumulative effect of Digitalis.** *Gazette des Hospitaux*, April, 1907.

AN appreciation of digalen as a digitalis preparation which may be given either intra-muscularly or by mouth without causing any cumulative symptoms or gastric irritation if long continued. Its action is quick and also constant. The author gives up to 4 cc. in 24 hours, this quantity representing 60 cgms. of the powdered *fresh* leaves. The fact that fresh leaves are employed in its preparation, instead of the dried ones which are used in the official preparations, probably accounts for the differences in action.

FRANK E. TYLECOTE.

DUNN (C. H.) **Living Lactic Acid Bacilli in the treatment of Intestinal Fermentation in Infancy.** *Archives of Pediatrics*, April, 1907.

IN the classification recently adopted by the Department of Pediatrics of the Harvard Medical School, a distinction is drawn between infectious diarrhœa and intestinal indigestion of a fermentative type. It is contended that such a distinction is in most cases represented by a clinical parallel permitting of diagnosis between the conditions upon clinical grounds. Tissue changes are discarded as a basis for classification, and ileo-colitis is no longer regarded as a distinct disease. The present paper embodies the results of a clinical study, the bacteriological side being reserved for future investigation. The clinical experiments were suggested by Tissier's work upon the bacteriology of intestinal fermentation (*Annales de l'Inst. Pasteur*, xix., 5). Tissier found that the reappearance of the normal intestinal flora, which he observed to take place in recovery, could be furthered by diminishing the proteids and increasing the carbohydrates, and more specifically by introducing into the intestine an organism tending to inhibit the growth of abnormal forms. He selected the lactic acid bacillus, which has the advantage of being harmless. The result was a rapid transformation of the stools, subsidence of symptoms, and gain in weight. For the practical application of this method Dunn chose buttermilk, as combining medicament and food, and as providing a constant food for all the cases. Buttermilk had, of course, already been advocated in such cases, but for chemical reasons, and not on account of its bacterial content. Cooked or pasteurised buttermilk has no advantage over a properly modified milk. The milk for his purpose was first pasteurised, then inoculated with a pure culture of the bacillus lactis and ripened up to the proper acidity and precipitation of casein. This was used

in 35 selected cases, in the majority of which all ordinary and routine measures had failed. In 23 the result was favourable as to both dejecta and weight; in three there was immediate cessation of diarrhœa and change in the stools, but no gain in weight; in nine it had no effect. Of the 35, five were of the irritative type, and were all failures, two were dysenteric and also failures, while only two of the failures were truly fermental. Thus of 28 fermental cases, 23 were successful, three partially so, and two were failures. To exclude the possibility of a mere chemical influence 14 resistant cases were put first on pasteurised buttermilk, but failed to improve; pasteurisation was then omitted, with immediate improvement. In four cases no other treatment was used, and of these two were strikingly successful, one improved but did not gain in weight, and one failed. In cases where immediate improvement of the symptoms and discharges occurred without increase in weight, the buttermilk was supplemented by alternate feedings of modified milk and steady gain began at once, the buttermilk alone not being adapted to the caloric needs of the child. He suggests a combination of lactic acid treatment with percentage feeding, the mixture being made as ordered and then ripened with the bacilli.

The successful treatment in fermental cases and its failure in irritative and infectious types shows the importance of accurate diagnosis based upon the etiology. The results are not regarded as conclusive, but as illustrating a safe method of treatment with a logical and scientific basis, which may prove of value in obstinate cases of fermentative diarrhœa. The cases are described in detail. The buttermilk seems to have been well tolerated on the whole; vomiting occurred at first in some cases, but usually soon passed off.

G. R. Mill.

Hoke and Andrews. **Treatment of the Bone Deformity in Scoliosis.** *New York Med. Journ.*, May 11, 1907.

The method described was designed for severe cases of bone deformity on the principle of employing the forces of respiratory expansion. Given scoliosis from any cause, the resulting change in the distribution of the respiratory expansion forces tends to further increase the deformity due to rotation. These forces must be continuously opposed in the treatment of the bone deformity. This is attained by a plaster jacket specially applied, aided by certain steel supports according to the requirements of the particular case. During application the patient must be on the back with the legs elevated to obviate lordosis, and the desired pressure is obtained with adjustable pressure pins. The rotary and deforming respiratory forces are thus opposed, and the weight of the body used as a counter force. Steel pieces are incorporated for the attachment of any steel supports for the shoulders, head, or upper exposed parts of the chest. After the plaster has hardened the pressure pins are removed, and next day the plaster is cut away over the areas which one desires to fill out.

The cases showed great improvement in the shape of the thorax, marked decrease in rotation and improvement in the curve of the spine. Detailed description of the apparatus used in the application of the jacket is reserved for a later article.

G. R. Mill.

The Treatment of Gastric Ulcer. *Dublin Journal of Med. Sci.*, March, 1907.

This number contains a report of papers read before the Royal Academy of Medicine in Ireland dealing with both the medical and surgical aspects of gastric ulcer. The discussion was opened by Dr. Little, who summed up the treatment, with some exceptions, as being constituted by rest in bed and suitable dietary, drugs not often being required. The dietary he employs is simple—modified milk, beef tea, mutton broth, essence of chicken; thereafter a little Groult's tapioca, Horlick's malted milk, Benger's food, Plasmon biscuits, on to whiting or plaice, and very soon chicken or mutton. Cream generally agrees admirably. The bowels are to be kept open by enemata. Vomiting and hæmorrhage require special treatment. As the writer cannot recollect a case in which gastric ulcer ended fatally either by gradual exhaustion of hæmorrhage, he would limit surgical treatment to cases where perforation has occurred or where there is a markedly dilated stomach. Sir Charles Ball would perform posterior gastro-enterostomy in all cases which did not show rapid and marked improvement under medical treatment and in cases of recurrence.

F. G. Hack.

Reviews.

"The Diagnosis and Modern Treatment of Pulmonary Consumption, with special reference to the Early Recognition and Permanent Arrest of the Disease." By ARTHUR LATHAM, M.A., M.D. (Oxon.), F.R.C.P. (Lond.). Third edition. London: Baillière, Tindall and Cox, 1907. Price 5s. net.

WE expressed our high appreciation of the merits of the first edition of this work on its publication some few years ago, and need add very little more now. A number of additions have been made to various sections, and new sections have been inserted on the value of the opsonic index in diagnosis and treatment, the use of Koch's new tuberculin in treatment and on the value of manual labour at Sanatoria.

Dr. Latham has not obtained any information of value by the use of the opsonic index in cases of suspected early consumption, and he also finds the technique of the method open to many errors and difficult to carry out in practice. He moreover has similar criticism to make on the use of the opsonic index in treatment of phthisis by Koch's new tuberculin. In the author's opinion minute doses of tuberculin, together with open-air treatment, appear to give a large proportion of arrested cases of pulmonary tuberculosis without systemic infection, and to make the arrest more permanent than treatment by open-air methods alone. The use of tuberculin in systemic infection, or in rapidly advancing disease is useless and frequently harmful.

As to heredity in tuberculosis, Dr. Latham is tempted to conclude that, if reasonable precautions are adopted, there is no reason why the children of tuberculous parents should develop the disease more frequently than the offspring of those who are not tuberculous.

We can heartily recommend this very interesting and practical book.

"The Essentials of Chemical Physiology," for the use of students. By W. D. HALLIBURTON, M.D., LL.D., F.R.S. Sixth edition. London: Longmans Green & Co., 1907. Price 4s. 6d. net.

THIS edition of Dr. Halliburton's excellent work has been subjected to a thorough revision, and changes which experience has shown to be advisable have been introduced into the practical exercises. The text has been rewritten in a good many parts, to keep pace with increased knowledge, and the results of recent research have been added wherever necessary.

The book is of an ideal type for students, full of useful information, devoid of padding, well printed and illustrated, and all within a very convenient size of volume. It is a fine piece of work, and we can unhesitatingly recommend students to use it.

"The $CHCl_3$ Problem." By Richard Gill, B.Sc., M.B., B.S. (Lond.), F.R.C.S. (Eng.). London: Wm. Blackwood & Sons.

This work is different from any other on the subject. It is apparently the production of a man who is enamoured of the science of logic, and it bears the impression of his personality on every part of it. It stands apart both by its method of arrangement and the style in which it is written. The author does not believe in applying the experience gained by experiments on animals to the human subject, for he says: "It is admitted that the results of experimental investigation concerning $CHCl_3$ action on the lower animals do not satisfy the experience which is acquired from its administration to man." Consequently there are in the book no accounts of physiological experiments, no blood pressure tracings, no diagrams, and no references whatever to the opinions of others. The data from which Dr. Gill draws his conclusions are all obtained from his own extensive experience on the administration of anæsthetics to the human subject. He approaches the subject in a leisurely and philosophical manner and treats it by severely logical methods with a profusion of logical terms. The style, however, is somewhat diffuse and rather involved, in fact it bears about the same relation to that of the generality of medical books, as does the more obscure portions of Browning to say Scott or Tennyson.

There is a "Preface" of seventy-six pages, followed by an "Introduction" of sixteen pages; then come chapters on "The parts on which $CHCl_3$ acts;" "The $CHCl_3$ factor," and "Results." These comprise the first volume of 300 pages.

The second volume of 289 pages consists of three chapters on "Results," "The theory of the physiological action of $CHCl_3$," and "Experimental investigation." Throughout the work the aim of the author appears to be directed to show that of the phenomena occurring during the inhalation of chloroform the majority are not directly due to the action of the drug. Further, that in the practical administration the degree of the physiological action of $CHCl_3$ should be restricted to the limit of anæsthesia, *i.e.*, the lowest degree of $CHCl_3$ unconsciousness, both on the induction and during the progress of the state of unconsciousness. Thus: "The fundamental requisite in $CHCl_3$ administration is the minimum displacement of air. This is achieved by the use of small amounts of standard $CHCl_3$ frequently administered." This he gives with "a two-fold piece of lint, cut in a certain shape, and turned into a half cone."

As regards the use of inhalers, he says: "From the fact that the anæsthetic percentage of $CHCl_3$ becomes, after a period of action, a relative overdose if continued beyond that period, and also because of the occasional occurrence of moderate degrees of the action of complicatory causes, not necessitating the withdrawal of $CHCl_3$, all systems or apparatus stand condemned which do not contain within themselves the requisite means of regulating the proportion of $CHCl_3$ in the $CHCl_3$-air atmosphere, both to the constant and taemporary variations which appear in the progress of its action."

The book is not easy to read or to review.

"A Text-Book of Obstetrics." By Henry J. Garrigues, A.M., M.D. Second edition; pp. 888, with 525 illustrations. Philadelphia and London: J. B. Lippincott and Co., 1907. Price 25s. net.

The author's aim in this work has been "to write a text-book, not a book of reference." He certainly succeeds in presenting his matter in a very clear and complete manner, without, however, burdening his readers with a host of unnecessary details. His practical directions are generally good and reliable, and many useful hints may be gleaned therefrom for the treatment of some of the minor, but still often troublesome, complaints both of the mother and child. The important subjects of hæmorrhage, eclampsia, and puerperal infection are adequately dealt with both from the medical and surgical standpoints. The work is profusely illustrated, and is well up-to-date. It should prove a valuable addition to the library of every general practitioner and obstetrician.

"Text Book on Diseases of the Heart." By Graham Steell, M.D., F.R.C.P., Senior Physician to the Manchester Royal Infirmary; with an Appendix on the "Volume of Blood in relation to Heart Disease," by J. Lorrain Smith, M.A., M.D., Professor of Pathology. Manchester: The University Press. Price 7s. 6d. net.

In this work, which makes its appearance so opportunely at a time when the recent acquisitions to our knowledge of cardiac affections are so important as well as so numerous, the reader will find an admirable presentation of the clinical aspects of cardio-vascular diseases. While the author is not insensible to the opinions and hypotheses advanced by other writers, he draws largely from his own wide experience and acute powers of observation for the details of the clinical features which he portrays so clearly, and also upon his own judgment for the interpretation of the phenomena which he describes so lucidly.

In the opening pages the general symptoms and signs indicative of heart disease are dealt with. Attention is drawn to the close relation of cardiac and renal symptoms, and data are given whereby to distinguish between actual kidney disease and mere passive congestion of the kidneys, a diagnostic problem which so frequently taxes the utmost skill of the physician. When considering the cerebral symptoms associated with heart disease, the author takes the opportunity of stating that, in his opinion, the belief that some varieties of mental aberration may be ascribed to certain forms of heart disease has probably little foundation in fact.

The next section deals with the clinical pathology of heart disease, and attention is then directed to the causation and consequence of cardiac muscle failure. The recognition of that affection is enforced in a manner commensurate with its importance. Passing to a consideration of the physical methods of diagnosis, the information obtainable by inspection, palpation, percussion and auscultation is thoroughly and carefully described. A brief abstract is given of the

author's valuable research on the relative frequency of the auscultatory signs of mitral stenosis, from which it appears that in this disease the pathognomonic presystolic murmur is the rarest, while the mitral systolic murmur, which bears only an indirect relation to stenosis, is the most common murmur, the diastolic apical murmur standing between these as regards frequency.

The instrumental examination of the veins and arteries is fully discussed. The reader is furnished with an excellent account of the modern views regarding the functions of the heart muscle, and he is initiated into the mysteries of functional disturbance as revealed by cardiac arrhythmia. This subject is illustrated by a series of good tracings.

In the section treating of the disease of the aorta and of angina pectoris, the researches of Mackenzie and of Head receive due recognition, and throughout this section many matters which claim our closest attention and interest are discussed. The author thereafter passes to the individual valvular lesions, congenital abnormalities, pericarditis, and septic endocarditis. The bacteriological examination of the blood, as an aid to the diagnosis of the latter disease, is not mentioned.

In the sections upon treatment, sound and practical advice is given upon the vexed question of diet, while the pages dealing with the auxiliary therapeutic measures contain much that is deserving of careful perusal and close reflection.

It will thus be evident that the work affords a comprehensive and reliable guide to the clinical study of cardiac disease.

"The Influence of Cod-Liver Oil on Tuberculosis." By J. W. Wells, M.D. Manchester University Press. Price 2s. 6d. net.

Dr. Wells' small brochure is the record of an excellent piece of work. His object was to ascertain whether the popular notion that cod-liver oil is a powerful adjuvant in the treatment of tuberculosis, has any foundation in facts. To do this he experimented with pigs, feeding them on cod-liver oil and on Scott's Emulsion, the well-known proprietary preparation of the oil, and used some as control animals, inoculating the remainder with tubercle, and causing them to take infective material in their food. Dr. Wells seems to have taken all the precautions to secure trustworthy results which ingenuity and foresight could suggest, and his final conclusions therefore have a value which cannot, unfortunately, be always admitted in similar experiments. He shows that both the plain oil and its emulsion have certainly a favourable result on the nutrition of the infected animals, and that the evidence points to the emulsion being superior to the plain oil in its effects. We cannot here follow Dr. Wells into the minute details of his experiments, which, however, will interest the student of the subject; it is sufficient to note the conclusions of the author, and to congratulate him on a piece of work which must have entailed the most exact attention and laborious effort in its execution.